COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

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Secretary of Natural Resources

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Draft Date, 2019

Mr. Cosmo Servidio
Regional Administrator
U.S. EPA Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Subject: Virginia Annual Air Quality Monitoring 2019 Network Review

Dear Mr.Servidio:

In accordance with the Commonwealth of Virginia State Implementation Plan and requirements of the EPA 105 and PM2.5 103 Grants, the Virginia Department of Environmental Quality has conducted an annual review of the ambient air monitoring network.

This review was completed by the DEQ Office of Air Quality Monitoring. Attached is a listing of all sites in the Virginia Air Quality Monitoring Network as of this date. Also attached are maps of pollutant monitoring sites and instrumentation changes that have taken place since the last review and are expected to occur through June 30, 2020.

A draft of the Annual Network Review was posted for public inspection from “Draft begin date, 2019 to Draft end date, 2019” on the VA DEQ "Air Monitoring Public Notices" web page. Notification of the public notice was included in Virginia’s Regulatory Town hall page as well. XX comments were received as a result of the public notice and a response to comments is attached. Please feel free to contact me if you have any questions regarding this transmittal.

Sincerely,

David K. Paylor

cc: Alice Chow, EPA III
Mike Dowd, VA DEQ
Attachments

Annual Ambient Air Monitoring Network Plan

2019

COMMONWEALTH OF VIRGINIA

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR DIVISION – OFFICE OF AIR QUALITY MONITORING

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INTRODUCTION

40 CFR Part 58 Paragraph 10 states as follows:

§58.10 Annual monitoring network plan and periodic network assessment

(a)(1) Beginning July 1, 2007, the state, or where applicable local, agency shall submit to the Regional Administrator an annual monitoring network plan which shall provide for the documentation of the establishment and maintenance of an air quality surveillance system that consists of a network of SLAMS monitoring stations that can include FRM, FEM, and ARM monitors that are part of SLAMS, NCore, CSN, PAMS, and SPM stations. The plan shall include a statement of whether the operation of each monitor meets the requirements of appendices A, B, C, D, and E of this part, where applicable. The Regional Administrator may require additional information in support of this statement. The annual monitoring network plan must be made available for public inspection and comment for at least 30 days prior to submission to the EPA and the submitted plan shall include and address, as appropriate, any received comments.

This document is intended to address this regulatory requirement for an annual air monitoring network plan for the Commonwealth of Virginia. The requirements for the components of the annual monitoring network plan are contained in §58.10 paragraphs (2) through (13).

NETWORK DESIGN

The monitoring program for the Virginia Department of Environmental Quality operates the ambient air monitoring network of both gaseous and particulate pollutant monitors required in 42 US Code §7410 (a) (2) (B) (i) which requires that the Commonwealth of Virginia:

> ***(B)*** *provide for establishment and operation of appropriate devices, methods, systems, and procedures necessary to—*
> ***(i)*** *monitor, compile, and analyze data on ambient air quality,*

The implementation and operating requirements of the ambient monitoring network are contained in 40 CFR Part 58 as defined below in §58.2 as follows:

> *(1) Quality assurance procedures for monitor operation and data handling.*
> *(2) Methodology used in monitoring stations.*
> *(3) Operating schedule.*
> *(4) Siting parameters for instruments or instrument probes.*
> *(5) Minimum ambient air quality monitoring network requirements used to provide support to the State implementation plans (SIP), national air quality assessments, and policy decisions. These minimums are described as part of the network design requirements, including minimum numbers and placement of monitors of each type.*

Table 1 below shows the number of monitors and types of pollutants monitored and how they are distributed throughout the Commonwealth by Air Quality Control Region and Metropolitan Statistical Area. This table demonstrates air monitor distribution and pollutant measurement consistent with Part 58 Appendix D. In addition to the MSA/CBSA based pollutant monitoring, Virginia maintains additional monitoring sites to meet additional federal and state based monitoring programs. These programs are listed below.

Table 1 Air Monitoring Samplers/Analyzers in Virginia and Pollutants Monitored

MSA/CBSA(a)	Ozone	PM2.5	NO2	SO2	CO	PM10	Lead (Pb)
Kingsport-Bristol-Bristol, TN-VA		1 FRM					
Winchester, VA-WV	1	1 FRM				1	
Harrisonburg, VA	1	1 FRM	1	1			
Roanoke, VA	1	2 FRM	1	2	1		1
Blacksburg-Christiansburg-Radford VA				1			1
Lynchburg, VA		1 FRM					
Charlottesville, VA	1	1 FEM 1 FRM					
Richmond, VA	5	5 FRM, 2 FEM	3	2	2	2	
Virginia Beach-Norfolk-Newport News, VA-NC	3	3 FRM 1 FEM	2	2	2	2	
Washington-Arlington-Alexandria, DC-VA-MD-WV	6	3 FRM, 1 FEM	4	1	2	2	
Total – MSA/CBSA	18	23	11	9	7	7	2
Total- all sites(b)	21	25	11	10	7	8	2

(a) Metropolitan Statistical Areas/Core based statistical areas

(b) Includes sites not incorporated into an MSA or CBSA i.e. Shenandoah National Park (Ozone, IMPROVE); Rockbridge County (Ozone, IMPROVE); Carroll County (PM10); Wythe County (Ozone); City of Covington (SO2).

Ozone Network of Monitors – Virginia maintains a highly robust system of ozone monitors throughout the Commonwealth. As seen in Table 1 above, Virginia maintains more than the minimum number of ozone monitors required by regulations for the MSAs where the population is greater than one million i.e. the Washington-Arlington-Alexandria, DC-VA-MD-WV MSA, Richmond, VA MSA and Virginia Beach-Norfolk-Newport News, VA-NC MSA. The actual regulatory required number of monitors is shown in Attachment 1 to this document. In Virginia, there is an ozone monitoring "season" that runs from March 1 through October 31 as outlined in 40 CFR Part 58 Appendix D Table D-3. Virginia operates their monitors throughout the year to maintain operational consistency and to prevent the system-wide shut down and start-up that would be required if twelve month operation were not followed.

PM2.5 Network of Monitors – Virginia also maintains a highly robust system of PM2.5 monitors throughout the Commonwealth. As seen in Table 1 above, Virginia maintains more than the minimum number of PM2.5 monitors required by regulations for the MSAs where the population is greater than one million i.e. the Washington-Arlington-Alexandria, DC-VA-MD-WV MSA, Richmond, VA MSA and Virginia Beach-Norfolk-Newport News, VA-NC MSA. The actual regulatory required number of monitors is shown in Attachment 1 to this document. Virginia is working towards replacing the PM2.5 FRM filter-based samplers with continuous FEM

monitors. This is an ongoing effort. The rate of these replacements is dictated by funding and technical developments in the market availability of these continuous monitors.

Urban Air Toxics Programs – The Department of Environmental Quality maintains two urban air toxics sites at: 51-670-0010 Hopewell City Woodson Middle School, and 51-810-0008 Virginia Beach City Virginia Beach DEQ Tidewater Regional Office. DEQ is currently only sampling for metals at the Virginia Beach site due to funding considerations. The Urban Air Toxics program operates on a one in six day basis.

NCore, the National Core Monitoring Network – The NCore site maintained by DEQ is located at 51-087-0014 Henrico County MathScience Innovation Center (MSIC). The Design Criteria for the NCore site in Virginia is defined in Appendix D of Part 58 of 40 CFR.

National Air Toxics Trend Site – DEQ maintains a NATTS site located at 51-087-0014 Henrico County MSIC site. In addition to the suite of pollutants measured in the Urban Air Toxics Program, NATTS also samples for Polycyclic Aromatic Hydrocarbons (PAHs). The National Air Toxics Trend Site operates on a one in 6 day basis.

Near Road Monitoring – DEQ will install three near road monitoring sites consistent with the design requirements contained in Appendix D. DEQ currently has two operating sites located at 51-760-0025 Richmond City Joseph Bryan Park and 51-059-0031 located in Springfield at the Backlick Road Park and Ride. The third site will be located in the Virginia Beach-Norfolk-Newport News VA-NC is described in the Virginia Network Changes section.

Data Requirements Rule - EPA published a rule entitled, "Data Requirements Rule for the 2010 1-Hour Sulfur Dioxide (SO_2) Primary National Ambient Air Quality Standard (NAAQS)," on August 21, 2015 (80 FR 51052). This rule, referred to as the DRR, directed states to provide data characterizing air quality in areas with large sources of SO_2 emissions and to identify maximum one-hour SO_2 concentrations in ambient air. The DRR required that, at a minimum, air agencies characterize air quality around facilities that emitted 2,000 tons per year (tpy) or more of SO_2 in 2014.

For areas that were originally characterized using air quality modeling, the DRR includes an ongoing data requirement that applies only where the modeling was based on actual emissions and where the area has not subsequently received a nonattainment designation. In such cases, the air agency is required to submit an annual report to the EPA providing updated emissions information and recommending to the EPA whether further modeling is warranted to assess any expected changes in recent air quality.

Virginia has evaluated the original DRR modeling and recent actual emissions data and determined that no additional modeling analyses are warranted for this annual review period. Specifically, this decision is based on three factors:

1. A comparison of the original actual modeled emissions to the most recent annual emissions for each affected facility.
2. The fact that there have been no increases in short-term emissions at any facility.
3. The original modeling demonstrated NAAQS compliance.

The table below provides a comparison of the most recent emissions (2017) to the modeling period.

SO_2 Emissions Summary

Federal ID	Facility	2012 SO_2 Emissions (TPY)	2013 SO_2 Emissions (TPY)	2014 SO_2 Emissions (TPY)	2015 SO_2 Emissions (TPY)	2017 SO_2 Emissions (TPY)	Jurisdiction
VA0000005119900001	Dominion – Yorktown Power Station	---	9,052.27	9,755.51	4,549.34	971.51	York County
VA0000005104100002	Dominion - Chesterfield Power Station	1,229.90	1,966.42	2,180.92	---	1,358.32	Chesterfield County
VA0000005108300046	Dominion/ODEC – Clover Power Station	1,875.14	2,262.22	2,083.52	---	856.17	Halifax County

In all cases, the most recent emissions are lower than the average modeled emission rates used in the original submittal to EPA. Dominion – Yorktown Power Station and Dominion/ODEC – Clover Power Station have experienced substantial reductions due to retired units (Yorktown) and reduced utilization (Clover). There also has been an emissions reduction at the Dominion – Chesterfield Power Station.

The original modeling demonstrated NAAQS compliance for all three facilities as shown in the table below.

Modeling Analysis Results Summary	**Modeled SO_2 Concentration**	**Monitored SO_2 Background Concentration**	**Total Concentration**	**Percent of NAAQS**
Clover Power Station	38.09 µg/m³	14.06 µg/m³	52.15 µg/m³	27%
Chesterfield Power Station	62.53 µg/m³	18 µg/m³	80.53 µg/m³	41%
All modeled sources - Chesterfield	120.09 µg/m³	18 µg/m³	138.09 µg/m³	70%
Yorktown Power Station	180.61 µg/m³	11.68 µg/m³	192.29 µg/m³	98%

The results for Dominion/ODEC Clover Power Station fall below 50% of the NAAQS. Analogous to the monitor shutdown provisions, the requirement for the annual emissions assessments for this facility may be terminated.

The results for the Chesterfield Power Station are expect to remain well below the NAAQS. In fact, the impact from the facility itself, including background is less than 50% of the NAAQS. The cumulative modeled design value from all sources was 138.09 µg/m^3; however, the contribution from the Chesterfield Power Station to the maximum design value was minimal (0.0072 µg/m3).

Finally, the results for the Yorktown Power Station are expected to decrease substantially due to recently retired coal units and the facility will remain in compliance with the NAAQS.

MULTI-STATE/MULTI-AGENCY MONITORING

Virginia shares monitoring responsibilities in Metropolitan Statistical Areas where multiple states or localities are included in the definition of the MSA. For the most part Virginia meets the minimum monitoring requirements individually without requiring the inclusion of another state or localities in meeting the minimum monitoring requirements.

Washington Metropolitan area – This area is defined as the Washington-Arlington-Alexandria, DC-VA-MD-WV metropolitan statistical area. In this area Virginia generally meets the minimum monitoring requirements individually with the exception of the SO2 Population Weighted Emissions Inventory (PWEI) requirements located in 40 CFR 58 Appendix D paragraphs 4.4.2 and 4.4.2(1). DEQ currently has one SO2 monitor located at the Lee Park Site (51-059-0030).

Hampton Roads – Hampton Roads is made up of the VA Beach-Norfolk-Newport News VA-NC Metropolitan Statistical Area. This MSA includes Currituck County and Gates County in North Carolina. By Memorandum of Agreement signed April 5, 2016 by both VA DEQ and NC DENR, the respective agencies agree that the monitoring requirements for this MSA to include the North Carolina Counties are currently met by the monitors maintained in Virginia.

ACRONYM LISTING

Acronym	Acronym Description
AQCR	Air Quality Control Region (see 9 VAC 5-20-200)
CAA	Clean Air Act
CBSA	Core Based Statistical Area
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CSN	Chemical Speciation Network
EMP	Enhanced Monitoring Plan
ES	Elementary School
FEM	Federal Equivalent Method
FRM	Federal Reference Method
MSA	Metropolitan Statistical Area
NATTS	National Air Toxics Trend Site
NCore	National Core Monitoring Site
NO2	Nitrogen Dioxide
OTR	Ozone Transport Region
PAMS	Photochemical Assessment Monitoring
Pb	Chemical Symbol for metallic Lead
PM2.5	Particulate Matter less than 2.5 microns in diameter
PM10	Particulate Matter less than 10 microns in diameter
SLAMS	State/Local Air Monitoring Site
SO2	Sulfur Dioxide
SO2 DRR	Sulfur Dioxide Data Requirements Rule
TEOM	Tapered Element Oscillating Microbalance PM2.5 monitoring technology

Glossary

AADT means the annual average daily traffic.

Act means the Clean Air Act as amended (42 U.S.C. 7401, et seq.)

Air quality system (AQS) means the EPA's computerized system for storing and reporting of information relating to ambient air quality data.

Chemical Speciation Network (CSN) includes Speciation Trends Network stations (STN) as specified in paragraph 4.7.4 of appendix D of this part and supplemental speciation stations that provide chemical species data of fine particulate.

CO means carbon monoxide.

Design value means the calculated concentration according to the applicable appendix of part 50 of 40 CFR for the highest site in an attainment or nonattainment area.

Federal equivalent method (FEM) means a method for measuring the concentration of an air pollutant in the ambient air that has been designated as an equivalent method in accordance with part 53 of this chapter; it does not include a method for which an equivalent method designation has been canceled in accordance with §53.11 or §53.16.

Federal reference method (FRM) means a method of sampling and analyzing the ambient air for an air pollutant that is specified as a reference method in an appendix to part 50 of this chapter, or a method that has been designated as a reference method in accordance with this part; it does not include a method for which a reference method designation has been canceled in accordance with §53.11 or §53.16 of this chapter.

Meteorological measurements means measurements of wind speed, wind direction, barometric pressure, temperature, relative humidity, solar radiation, ultraviolet radiation, and/or precipitation that occur at SLAMS stations including the NCore and PAMS networks.

Metropolitan Statistical Area (MSA) means a CBSA associated with at least one urbanized area of 50,000 population or greater. The central-county, plus adjacent counties with a high degree of integration, comprise the area.

Monitor means an instrument, sampler, analyzer, or other device that measures or assists in the measurement of atmospheric air pollutants and which is acceptable for use in ambient air surveillance under the applicable provisions of appendix C to this part.

Monitoring agency means a state, local or tribal agency responsible for meeting the requirements of this part.

Monitoring organization means a monitoring agency responsible for operating a monitoring site for which the quality assurance regulations apply.

NATTS means the national air toxics trends stations. This network provides hazardous air pollution ambient data.

NCore means the National Core multipollutant monitoring stations. Monitors at these sites are required to measure particles ($PM_{2.5}$ speciated $PM_{2.5}$, $PM_{10-2.5}$), O_3, SO_2, CO, nitrogen oxides (NO/NO_y), and meteorology (wind speed, wind direction, temperature, relative humidity).

Near-road monitor means any approved monitor meeting the applicable specifications described in 40 CFR part 58, appendix D (sections 4.2.1, 4.3.2, 4.7.1(b)(2)) and appendix E (section 6.4(a), Table E-4) for near-road measurement of $PM_{2.5}$, CO, or NO_2.

Network means all stations of a given type or types.

Network Plan means the Annual Monitoring Network Plan described in §58.10.

PAMS means photochemical assessment monitoring stations as prescribed in 40 CFR part 58 Appendix D paragraph 5.

Pb means lead.

PM means particulate matter, including but not limited to PM_{10}, PM_{10C}, $PM_{2.5}$, and $PM_{10-2.5}$.

$PM_{2.5}$ means particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers as measured by a reference method based on appendix L of part 50 and designated in accordance with part 53 of this chapter, by an equivalent method designated in accordance with part 53, or by an approved regional method designated in accordance with appendix C to this part.

PM_{10} means particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by a reference method based on appendix J of part 50 of this chapter and designated in accordance with part 53 of this chapter or by an equivalent method designated in accordance with part 53.

$PM_{10–2.5}$ means particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers and greater than a nominal 2.5 micrometers as measured by a reference method based on appendix O to part 50 of this chapter and designated in accordance with part 53 of this chapter or by an equivalent method designated in accordance with part 53.

SLAMS means state or local air monitoring stations. The SLAMS include the ambient air quality monitoring sites and monitors that are required by appendix D of this part and are needed for

the monitoring objectives of appendix D, including NAAQS comparisons, but may serve other data purposes. The SLAMS includes NCore, PAMS, CSN, and all other state or locally operated criteria pollutant monitors, operated in accordance to this part, that have not been designated and approved by the Regional Administrator as SPM stations in an annual monitoring network plan.

SO_2 means sulfur dioxide.

Special purpose monitor (SPM) station means a monitor included in an agency's monitoring network that the agency has designated as a special purpose monitor station in its annual monitoring network plan and in the AQS, and which the agency does not count when showing compliance with the minimum requirements of this subpart for the number and siting of monitors of various types. Any SPM operated by an air monitoring agency must be included in the periodic assessments and annual monitoring network plan required by §58.10 and approved by the Regional Administrator.

TSP (total suspended particulates) means particulate matter as measured by the method described in appendix B of Part 50.

VOC means volatile organic compounds.

AIR QUALITY MONITORING NETWORK CHANGES

MONITORING SITE CHANGES SINCE LAST REVIEW
JULY 1, 2018 to JUNE 30, 2019

Photochemical Assessment Monitoring Station
51-087-0014, 72-M, MathScience Innovation Center Continuous PM2.5, Henrico County, AQCR5

Based on 40 CFR part 58, Appendix D, State air monitoring agencies are required to begin making PAMS measurements at their NCore location(s) by June 1, 2019. The equipment needed to measure PAMS parameters were to be purchased by USEPA using a nationally negotiated contract and delivered to the monitoring agencies. USEPA has announced that due to contract delays, the necessary equipment will not be delivered in time to begin making PAMS measurements by June 1, 2019. USEPA has indicated that it is working on a proposed rule to extend the start date of PAMS measurements and expects that this proposed rule change will be signed by June 1, 2019. As a result of the~~,~~ delay Virginia DEQ will not begin making PAMS measurements at the MathScience Innovation Center NCore location (51-087-0014) in 2019, and will work with EPA to begin measurements on or before the final promulgated revised start date for this network. Figure 5 below provides and overview of the MathScience Center site and identifies where the equipment will be located.

Figure 5 MSIC monitoring site with PAMS component locations identified

40 CFR Part 58 Appendix D paragraph 5 (b) contains the listing of the required PAMS measurements to be performed at the MSIC NCore site. Table 1 below provides a listing of the measured parameters and the status of each instrument.

Table 1 PAMS Parameter Measurement Method and Status

NO.	Measured Parameter	Instrument	Status July 1, 2019
1	Hourly averaged speciated volatile organic compounds (VOCs)	Markes/Agilent Automated Gas Chromatograph with Kori Drying system	In place and operating
2	Three 8-hour averaged carbonyl samples per day on a 1 in 3 day schedule	ATEC Model 8000 Cartridge Sampler	In place and operating
3	Hourly averaged O_3	Thermo 49i ozone monitor, EQOA-0880-047	In place and operating
4	Hourly averaged NO	Thermo 42i TL NO2 monitor, RFCA-0981-054	In place and operating
5	Hourly averaged True NO_2	TAPI T500U True NO2 monitor, EQNA-0512-200	In place and operating
6	Hourly averaged total reactive NO_y	Thermo 42i Y NOY monitor, RFCA-0981-054	In place and operating
7	Hourly averaged ambient temperature	MetOne 060A-2	In place and operating
8	Hourly vector-averaged wind direction	Young 053005 V	In place and operating
9	Hourly vector-averaged wind speed	Young 053005V	In place and operating
10	Hourly average atmospheric pressure	MetOne Model 092	In place and operating
11	Hourly averaged relative humidity	MetOne 083E-0-35 RH Sensor	In place and operating
12	Hourly precipitation	Young 52202 Tipping Rain Bucket Gauge	In place and operating
13	Hourly averaged mixing-height	Vaisala CL51 High Range Ceilometer	In place and operating
14	Hourly averaged solar radiation	MetOne 094-2 Solar Radiation Sensor	In place and operating
15	Hourly averaged ultraviolet radiation	Eppley TUVR Ultraviolet Radiation	In place and operating

INSTRUMENT CHANGES SINCE LAST REVIEW
JULY 1, 2018 through JUNE 30, 2019

51-087-0014, 72-M, MathScience Innovation Center T-640x Continuous PM2.5 monitor, Henrico County, AQCR5

As a result of the failure of the existing TEOM continuous PM2.5 monitor at the MSIC site, a new T-640 continuous FEM instrument was installed. Due to the constraints of our existing data acquisition contract, the hourly PM2.5 data from the MSIC site cannot be posted to the public web page. The information is provided to DEQ's forecasters directly and is available to the public upon request. The monitor is currently co-located with a filter-based FRM monitor. AQM will evaluate and compare the data from both monitors after a full year of operation.

51-003-0001, 33-A, Albemarle HS T-640 Continuous PM2.5 monitor, Albemarle County, AQCR4

As a result of the failure of the existing TEOM continuous PM2.5 monitor at the Albemarle High School site, a new T-640 continuous FEM instrument was installed. Due to the constraints of our existing data acquisition contract, the hourly PM2.5 data from the Albemarle site cannot be posted to the public web page. The information is provided to DEQ's forecasters directly and is available to the public upon request. The monitor is currently co-located with a filter-based FRM

monitor. AQM will evaluate and compare the data from both monitors after a full year of operation.

ANTICIPATED SITE CHANGES
JULY 1, 2019 through JUNE 30, 2020

51-650-XXXX Hampton Roads Near Road Site, AQCR6

Multiple efforts have been made to locate the Hampton Roads Near road site in the highest possible Fleet Adjusted AADT road segment. Table 2 below documents the evaluated road segments, the potential siting location(s), and the results of the monitoring site approval process.

Table 2 Near Road site location attempts

Road Segment	Fleet Adj.- AADT	Location of Site	Results of Approval Process
I-264 EB – I-64 to WCL VA Beach	132939	36° 51.185' N; -76° 11.706' W	City would not approve site due to proximity to underground water line
1-264 EB – SR 190 to SR225	125120	36° 50.05833' N; 76° 8.5633' W	Easement Owned by contiguous Apartment developer; would not allow construction
1-264 EB – SR 190 to SR225	125120	36.836963º N; -76.157183º W	Site located on newly sold Easement intended for VDOT road widening
1-264 EB – SR 190 to SR225	125120	36.843942º N; -76.169970º W	Exit from I-264 to be extended site is part of VDOT I-264 upgrade
I-64 WB – SR 134 to US 258	114323	37.043505° N -76.397359° W	Could not secure Locality approval and added construction eliminated access
I-64 EB – SR 134 to US 258	115266	Various Locations	No locations that meet the siting requirements could be identified
I-64 WB – HR Center parkway to ECL Newport News	107598	37.06249° N - 76.42181° W	Property owner, Thomas Nelson CC, indicated installation conflicted with planned construction for site
I-64 EB – SR 134 Mercury Blvd to I-664 HR Beltway	104266	37.036745° N -76.391074° W	City of Hampton rejected proposal due to conflict with proposed 5 year development plan for site

In addition to the eight listed sites, AQM rejected the road segment identified as US-13 from I-64 to WCL Virginia Beach because no suitable location could be identified. DEQ will continue to try and identify and evaluate sites in the Hampton Roads area.

ANTICIPATED INSTRUMENTATION CHANGES
JULY 1, 2019 through JUNE 30, 2020

Enhanced Monitoring Plan
Virginia Localities included in the Ozone Transport Region

1. REGULATORY AND LEGAL BASIS

In the final rulemaking establishing the current Ozone National Ambient Air Quality Standard (effective date December 28, 2015), the Environmental Protection Agency revised the requirements for the Photochemical Assessment Monitoring (PAMS) network. In addition to the changes in the suite of pollutants required to be monitored for the PAMS program, EPA also required a second part of the [PAMS] network design that required states with O_3 non-attainment areas and States in the Ozone Transport Region (OTR) to develop and implement Enhanced Monitoring Plans (EMPs).

The requirement for these EMPs is specified in regulation at 40 CFR §58.10 (11) which states "An Enhanced Monitoring Plan for O_3, if applicable, in accordance with the requirements of appendix D paragraph 5(h) of this part shall be submitted to the EPA Regional Administrator no later than October 1, 2019 or two years following the effective date of a designation to a classification of Moderate or above O_3 nonattainment, whichever is later."

Part 58 Appendix D Section 5 paragraph (h) specifies that "States with Moderate and above 8-hour O_3 nonattainment areas and states in the Ozone Transport Region as defined in 40 CFR 51.900 shall develop and implement an Enhanced Monitoring Plan (EMP) detailing enhanced O_3 and O_3 precursor monitoring activities to be performed. The EMP shall be submitted to the EPA Regional Administrator no later than October 1, 2019 or two years following the effective date of a designation to a classification of Moderate or above O_3 nonattainment, whichever is later. At a minimum, the EMP shall be reassessed and approved as part of the 5-year network assessments required under 40 CFR 58.10(d). The EMP will include monitoring activities deemed important to understanding the O_3 problems in the state. Such activities may include, but are not limited to, the following:

(1) Additional O_3 monitors beyond the minimally required under paragraph 4.1 of this appendix,
(2) Additional NO_X or NO_y monitors beyond those required under 4.3 of this appendix,
(3) Additional speciated VOC measurements including data gathered during different periods other than required under paragraph 5(g) of this appendix, or locations other than those required under paragraph 5(a) of this appendix, and
(4) Enhanced upper air measurements of meteorology or pollution concentrations.

Virginia is required to submit an enhanced monitoring plan due to the inclusion in the OTR of certain counties and cities located within the Commonwealth. The Clean Air Act specifies in §7511 c. (a) that the Consolidated Metropolitan Statistical Area that includes the District of Columbia is one of the jurisdictions that comprises the OTR. At the date of promulgation the OTR consisted of the following Counties and Cities in the Commonwealth of Virginia: City of Alexandria, Arlington County, Fairfax County, City of Fairfax, City of Falls Church, City of Manassas, City of Manassas Park, Loudoun County, Prince William County, and Stafford County. This is the list of counties and cities that will be deemed covered by the Enhanced Monitoring Plan.

2. PROPOSED ENHANCED MONITORING PLAN

a. Enhanced Ozone Monitoring

As listed in 40 CFR Part 58 Section 5 paragraph (h) (1) Virginia DEQ proposes to operate more ozone analyzers than the minimally required number of ozone analyzers contained Appendix D paragraph 4.1 as delineated in Table D-2 as shown below. The 2010 Census indicates that the population of the Washington D.C. CMSA was 5,636,232 million. The minimum number of ozone monitors for this CMSA is shown in 40 CFR Part 58 Appendix D Table D-2 (reproduced below) and identified in the shaded row.

TABLE D-2 OF APPENDIX D TO PART 58— SLAMS MINIMUM O_3 MONITORING REQUIREMENTS

MSA population[1 2]	Most recent 3-year design value concentrations ≥85% of any O_3 NAAQS[3]	Most recent 3-year design value concentrations <85% of any O_3 NAAQS[3 4]
>10 million	4	2
4-10 million	**3**	**1**
350,000-<4 million	2	1

MSA population[1] [2]	Most recent 3-year design value concentrations ≥85% of any O_3 NAAQS[3]	Most recent 3-year design value concentrations <85% of any O_3 NAAQS[3] [4]
50,000-<350,000[5]	1	0

In addition to the required minimum number of analyzers Virginia operates under an ozone monitoring season of March through October. Paragraph 4.1 (i) of Appendix D discusses the "ozone season" and provides the applicable time frames for each state in Table D-3. As another component of the Enhanced Monitoring Plan for the Commonwealth of Virginia, DEQ proposes to operate the ozone monitors throughout the year in those counties that comprise the OTR designated Counties. Table 1 below describes the applicable ozone sites. Effective October 1, 2019 the ozone analyzers listed in Table 1 will be operated year round and all applicable Quality Assurance requirements contained in 40 CFR Part 58 Appendix A and Volume II of the Quality Assurance Handbook will be met during the non-ozone season months. The data generated during the "non-ozone season" will be uploaded to AQS.

Table 1 Proposed ozone sites included in the Enhanced Monitoring Plan

Jurisdiction	EPA ID (State ID)	Site Name	Site Location
Arlington County	51-013-0020 (47-T)	Aurora Hills	735 18th street South
Fairfax County	51-059-0030 (46-B9)	Lee Park	6601 Telegraph Road
Loudoun County	51-107-1005 (38-I)	Ashburn – Broad Run HS	21670 Ashburn Road
Prince William County	51-153-0009 (45-L	Long Park	4603 James Madison Highway
Stafford County	51-179-0001 (44-A)	Widewater ES	101 Den Rich Road

b. Enhanced Nitrogen Dioxide Monitoring

In 40 CFR Part 58 Appendix D paragraph 4.3.3 (a), the requirement for Area-wide NO_2 Monitoring, states "Within the NO_2 network, there must be one monitoring station in each CBSA with a population of 1,000,000 or more persons to monitor a location of expected highest NO_2 concentrations representing the neighborhood or larger spatial scales." Virginia proposes to operate more than the regulatorily required number of Nitrogen Dioxide (NO2) analyzers in the Northern Region as described in Table 2 below. All listed NO2 sites in Table 2 are Neighborhood scale monitors.

Table 2 Nitrogen Dioxide sites in the affected Counties of the Washington D.C. CMSA

Jurisdiction	EPA ID (State ID)	Site Name	Site Location
Arlington County	51-013-0020 (47-T)	Aurora Hills	735 18th street South
Loudoun County	51-107-1005 (38-I)	Ashburn – Broad Run HS	21670 Ashburn Road
Prince William County	51-153-0009 (45-L)	Long Park	4603 James Madison Highway

3. WHAT ARE THE NEW REQUIREMENTS FOR IMPLEMENTING THE EMP

a. Monitor Operation

The regulations require that Virginia operate their ozone monitors in the cities and counties in the Ozone Transport Region from March 1 through October 31 each year. For

purposes of this enhanced monitoring plan Virginia will operate the ozone analyzers operating in the OTR counties year round.

b. Monitor routine maintenance

Historically Virginia DEQ has reduced the frequency of routine visits to the site down to once per month during the non-ozone season months of November, December, January and February. As part of this enhanced monitoring plan, Virginia DEQ will continue to visit the stations on the once in two week basis as is the practice during the ozone season months.

c. Monitor QA

Historically Virginia has reduced the frequency of QA activities during the non-ozone season months. The regional operators have relied on the automated QA activities and have only visited the station if the QA results indicated that there may be a problem at the station that needs attention. With the every two week visits the operators will now perform the bi-weekly required QA procedures in-station in the non-ozone season months as well.

d. Data Validation and Certification

Historically DEQ has not uploaded ozone data to the EPA AQS data base for the non-ozone season months. Upon implementation of this enhanced ozone monitoring plan Virginia DEQ will now upload ozone data from the monitoring stations located in the OTR counties to AQS for November, December, January and February for each year.

e. Notifications to localities and other states

Annual Monitoring Network plan is public noticed each year on the DEQ web page for at least 30 days as is required by 40 CFR §58.10. Announcement of this notification will be sent to Washington D.C. Department of Energy and the Environment, to the West Virginia Department of Environmental Protection and to the Maryland Department of the Environment. These are the other jurisdictions that comprise the Washington D.C. Combined Metropolitan Statistical Areas.

4. TIMELINE OF ACTIVITIES

The citation above, 40 CFR §58.10 (11), requires that Virginia DEQ submit an Enhanced Monitoring Plan to EPA by October 1, 2019. This Annual Monitoring Network Plan (AMNP) is the means by which DEQ will submit the plan. The Regulatory date for the submittal of the AMNP is July 1 which ensures Virginia's compliance with the October 1, 2019 date and will facilitate public comment on the EMP. See Table 3 below with the projected dates for the regulatory steps for the AMNP review process.

Action Taken		Begin Date
a.	Annual Monitoring Network Plan to Public Notice	May 17, 2019
b.	Conclusion of Public Notice	June 18, 2019
c.	Incorporate comments	June 21, 2019
d.	Receive Internal Signatures	June 25, 2019
e.	Transmit to EPA	June 26, 2019
f.	EPA Approval	October 28, 2019
g.	Enhanced Monitoring Plan implemented	January 1, 2020

Attachment 1
Virginia Site Listing

Virginia Monitoring Network Minimum Monitoring Requirements
Ozone Monitors - Per 40 CFR 58.10(a)(9) all ozone monitors were in operation by March 1, 2018.

MSA	Population	Required Monitors	Operating monitors	Sites
Washington, DC-VA-MD-WV	6,131,977	3	51-061-0002	Fauquier County
Washington, DC-VA-MD-WV	6,131,977	3	51-179-0001	Stafford County
Washington, DC-VA-MD-WV	6,131,977	3	51-013-0020	Arlington County
Washington, DC-VA-MD-WV	6,131,977	3	51-059-0030	Fairfax County
Washington, DC-VA-MD-WV	6,131,977	3	51-107-1005	Loudon County
Washington, DC-VA-MD-WV	6,131,977	3	51-153-0009	Prince William Co.
Virginia Beach-Norfolk-Newport News, VA-NC	1,726,907	2	51-650-0008	Hampton City
Virginia Beach-Norfolk-Newport News, VA-NC	1,726,907	2	51-800-0004	Suffolk City
Virginia Beach-Norfolk-Newport News, VA-NC	1,726,907	2	51-800-0005	Suffolk City
Richmond, VA	1,281,708	2	51-033-0001	Caroline County
Richmond, VA	1,281,708	2	51-036-0002	Charles City County
Richmond, VA	1,281,708	2	51-041-0004	Chesterfield County
Richmond, VA	1,281,708	2	51-085-0003	Hanover County
Richmond, VA	1,281,708	2	51-087-0014	Henrico County
Roanoke, VA	313,698	1	51-161-1004	Roanoke County

Attachment 1 (cont.)
Virginia Site Listing

Virginia Monitoring Network Minimum Monitoring Requirements (continued)
PM2.5 Monitors

MSA	Population	Required Monitors	Operating monitors	Sites	Design Value - 24 hour	Design Value - Annual
Washington-Arlington-Alexandria, DC-VA-MD-WV	6,131,977	2	51-107-1005	Loudon County	15	7.1
Washington-Arlington-Alexandria, DC-VA-MD-	6,131,977	2	51-013-0020	Arlington County	17	7.5
Washington-Arlington-Alexandria, DC-VA-MD-WV	6,131,977	2	51-059-0030	Fairfax County	16	6.8
Washington-Arlington-Alexandria, DC-VA-MD-	6,131,977	2	51-059-0031	Fairfax County	18	8.7
Virginia Beach-Norfolk-Newport News, VA-NC	1,726,907	2	51-650-0008	Hampton City	14	6.2
Virginia Beach-Norfolk-Newport News, VA-NC	1,726,907	2	51-710-0024	Norfolk City	13	6.7
Virginia Beach-Norfolk-Newport News, VA-NC	1,726,907	2	51-810-0008	Virginia Beach City	14	6.7
Richmond, VA	1,281,708	2	51-760-0025	Richmond City	18	8.3
Richmond, VA	1,281,708	2	51-036-0002	Charles City County	14	6.6
Richmond, VA	1,281,708	2	51-041-0004	Chesterfield County	14	7
Richmond, VA	1,281,708	2	51-087-0015	Henrico County	15	7
Richmond, VA	1,281,708	2	51-087-0014	Henrico County	15	7.1
Roanoke, VA	313,698	0	51-161-1004	Roanoke County	15	6.7
Roanoke, VA	313,698	0	51-775-0011	Salem City	15	7.2

SITE I.D.	POLLUTANT MEASURED	METHOD OR INSTRUMENT (method code)	SAMPLING INTERVAL	MONITORING OBJECTIVE	SCALE	START DATE**	BEGINNING DATE	MONITOR NETWORK	MONITOR TYPE	LOCATION	LONGITUDE	LATITUDE	CBSAs/ MSAs	
51-035-0001/(23-A)	PM-10 (81102)	SSI HI VOL (062)	1/6	Population	Neighborhood	5/28/89	5/28/89	SLAMS	NAAQS Compliance	Carroll Co. - Gladeville Elem. School	-80.8798	36.7007	None	
51-197-0002/(16-B)	O3 (44201)	UV Absorption (047)	Continuous	Population Background	Regional	4/1/90	09/12/07	SLAMS	NAAQS Compliance	Rural Retreat - Wythe County Se	-81.2542 age Treatment Plant	36.8912	None	
51-520-0006/(101-E)	'PM2.5 FRM* (88101	Sequential (145)	1/3	Population Highest Concentration	Neighborhood	1/1/99	12/28/16	SLAMS	NAAQS Compliance	Bristol - Highland View Elem. Sch.	-82.1641	36.6080	28700/	Kingsport-Bristol-Bristol, TN-VA

There are no collocated monitors in AQCR I

* **Per 58.10(b)(7) this site is suitable for comparison with the NAAQS as described in 40 CFR §58.30.**

** **Start Date is the date that sampling began . Beginning Date is the date that monitoring commenced using the current method code.**

SITE I.D.	POLLUTANT	METHOD OR INSTRUMENT (method code)	SAMPLING INTERVAL	MONITORING OBJECTIVE	SCALE	START** DATE	BEGINNING DATE	MONITOR NETWORK	MONITOR TYPE	LOCATION	LONGITUDE	LATITUDE	CBSAs/ MSAs	CBSAs/MSAs - Description
51-069-0010 (28-J)	O3(44201)	UV Absorption (047)	Continuous	Population	Urban	4/1/91	4/6/06	SLAMS	NAAQS Compliance	Rest, Frederick County - Lester Buildings	-78.0816	39.2810	49020/	Winchester, VA-WV
51-069-0010 (28-J)	PM2.5 FRM*	Sequential (145)	1/3	Population	Urban	11/8/07	12/28/16	SLAMS	NAAQS	Lester Buildings	-78.0816	39.2810	49020/	Winchester, VA-WV
51-069-0010 (28-J)	PM2.5 (88501)	TEOM (701)	Continuous	Population	Urban	11/6/07	11/6/07	OTHER	AQI Forecasting	Lester Buildings	-78.0816	39.2810	49020/	Winchester, VA-WV
51-840-0002 (134-C)	PM-10 (81102)	SSI HI VOL (062)	1/6	Population	Neighborhood	9/13/89	9/13/89	SLAMS	NAAQS Compliance	Winchester - Courts Bldg.	-78.1631	39.1840	49020/	Winchester, VA-WV
51-161-1004 (19-A6)	NO2 (42602)	Chemiluminescence (074)	Continuous	Population	Urban	1/1/81	3/20/07	SLAMS	NAAQS Compliance	Vinton - Roanoke Co. Herman Horn ES	-79.8845	37.2834	40220/	Roanoke, VA
51-161-1004 (19-A6)	O3(44201)	UV Absorption (047)	Continuous	Population	Urban	1/1/81	4/1/07	SLAMS	NAAQS Compliance	Herman Horn ES	-79.8845	37.2834	40220/	Roanoke, VA
51-161-1004 (19-A6)	SO2 (42401)	Fluorescence (060)	Continuous	Population	Urban	2/4/87	5/20/09	SLAMS	NAAQS Compliance	Herman Horn ES	-79.8845	37.2834	40220/	Roanoke, VA
51-161-1004 (19-A6)	CO (42101)	Gas Filter Corr. (054)	Continuous	Population	Urban	2/4/87	3/18/13	SLAMS	NAAQS Compliance	Herman Horn ES	-79.8845	37.2834	40220/	Roanoke, VA
51-161-1004 (19-A6)	PM2.5 FRM* (88101)	Sequential (145)	1/3	Population	Urban	6/29/13	12/28/16	SLAMS	NAAQS Compliance	Herman Horn ES	-79.8845	37.2834	40220/	Roanoke, VA
51-161-1004 (19-A6)	PM2.5 (88501)	TEOM (701)	Continuous	Background	Urban	6/28/13	6/28/13	OTHER	AQI Forecasting	Herman Horn ES	-79.8845	37.2834	40220/	Roanoke, VA
51-163-0003 (21-C)	O3(44201)	UV Absorption (047)	Continuous	Background	Regional	4/8/99	9/15/06	SLAMS	NAAQS Compliance	Rockbridge Co. - Natural Bridge Station	-79.5126	37.6267	None	None
51-163-0003 (21-C)	PM2.5*** (88502)	IMPROVE (707)	1/3	Transport	Regional	9/1/94	9/1/94	IMPROVE	Regional Haze	Natural Bridge Station				
51-165-0003 (26-F)	SO2 (42401)	Fluorescence (060)	Continuous	Population	Urban	4/13/04	8/24/10	SLAMS	NAAQS Compliance	Rockingham Co. - VDOT	-78.8195	38.4775	25500/	Harrisonburg, VA
51-165-0003 (26-F)	NO2 (42602)	Chemiluminescence (074)	Continuous	Population	Urban	4/13/04	10/6/06	SLAMS	NAAQS Compliance	Rockingham Co. - VDOT	-78.8195	38.4775	25500/	Harrisonburg, VA
51-165-0003 (26-F)	PM2.5 FRM* (88101)	Sequential (145)	1/3	Population	Urban	1/3/07	12/27/16	SLAMS	NAAQS Compliance	Rockingham Co. - VDOT	-78.8195	38.4775	25500/	Harrisonburg, VA
51-165-0003 (26-F)	O3(44201)	UV Absorption (047)	Continuous	Population	Urban	4/1/07	4/1/07	SLAMS	NAAQS Compliance	Rockingham Co. - VDOT	-78.8195	38.4775	25500/	Harrisonburg, VA
51-775-0011 (110-C)	PM2.5 FRM* (88101)	Sequential (145)	1/3	Population	Neighborhood	11/1/08	12/28/16	SLAMS	NAAQS Compliance	Salem - Salem High School	-80.0810	37.2979	40220/	Roanoke, VA
51-770-0016 (109-N)	TSP-Lead (14129)	Hi-Vol/ICP-MS TSP Sampler (192)	1/6	Source Oriented	Middle	12/11/14	12/11/14	SLAMS	Source Specific	Roanoke City Mario Industries 2490 Patterson Ave	-79.9857	37.2749	40220/	Roanoke, VA
51-121-0009 (18-C)	TSP-Lead (14129)	Hi-Vol/ICP-MS TSP Sampler (192)	1/6	Source Oriented	Middle	10/4/17	10/4/17	SLAMS	Source Specific	Montgomery County Stroubles Creek WWTP 5277 Prices Fork Rd.	-80.51606	37.19184	13980/	Blacksburg-Christiansburg-Radford, VA
51-023-0004 (20-E)	SO2 (42401)	Fluorescence (100)	Continuous	Source Oriented	Neighborhood	1/1/17	1/1/17	INDUSTRIAL (SLAMS-equivalent)	SO2 DRR Rule	Botetourt County Roanoke Cement 6071 Catawba Road	-79.98649	37.44796	None	None
51-071-0007 (9-I)	SO2 (42401)	Fluorescence (100)	Continuous	Source Oriented	Neighborhood	1/1/17	1/1/17	INDUSTRIAL (SLAMS-equivalent)	SO2 DRR Rule	Giles County Lhoist North America 2093 Big Stony Creek Rd	-80.6539	37.3863	None	None
51-580-0008 (104-M)	SO2 (42401)	Fluorescence (060)	Continuous	Source Oriented	Neighborhood	1/1/17	1/7/17	INDUSTRIAL (SLAMS-equivalent)	SO2 DRR Rule	City of Covington WestRock, Inc 104.West Riverside St.	-79.9908	37.79139	None	None

There are two collocated monitors in AQCR II. A collocated PM2.5 is located at 51-069-0010, Frederick County and a collocated TSP-Lead monitor is located at 51-121-0009, Montgomery County.

* **Per 58.10(b)(7) this site is suitable for comparison with the NAAQS as described in 40 CFR §58.30.**

** **Start Date is the date that sampling began . Beginning Date is the date that monitoring commenced using the current method code.**

*** **Required Transport Site per 40 CFR Part 58 Appendix D paragraph 4.7.3**

SITE I.D.	POLLUTANT MEASURED	METHOD OR INSTRUMENT	SAMPLING INTERVAL	MONITORING OBJECTIVE	SCALE	START** DATE	BEGINNING DATE	MONITOR NETWORK	MONITOR TYPE	LOCATION	LONGITUDE	LATITUDE	CBSAs/ MSN	CBSAs/MSAs - Description
51-680-0015 (155-Q)	PM2.5 FRM* (88101)	Sequential (145)	1/3	Population	Neighborhood	4/1/03	12/28/16	SLAMS	NAAQS Compliance	Lynchburg - Water Tank	-79.2150	37.3327	31340/	Lynchburg, VA

* **Per 58.10(b)(7) this site is suitable for comparison with the NAAQS as described in 40 CFR §58.30.**

** **Start Date is the date that sampling began . Beginning Date is the date that monitoring commenced using the current method code.**

SITE I.D.	POLLUTANT MEASURED	METHOD OR INSTRUMENT	SAMPLING INTERVAL	MONITORING OBJECTIVE	SCALE	START** DATE	BEGINNING DATE	MONITOR NETWORK	MONITOR TYPE	LOCATION	LONGITUDE	LATITUDE	CBSAs/ MSAs	CBSAs/MSAs - Description
51-033-0001 (48-A)	O3(44201)	UV Absorption (047)	Continuous	Background	Regional	4/1/93	4/1/07	SLAMS	SLAMS	Caroline Co. - USGS Geonmagnetic Center	-77.3774	38.2009	40060/	Richmond, VA
51-061-0002 (37-B)	O3(44201)	UV Absorption (047)	Continuous	Background	Regional	8/11/81	4/1/06	SLAMS	SLAMS	Fauquier Co. - Area Phelps Wildlife	-77.7677	38.4737	47900/	Washington-Arlington-Alexandria, DC-VA-MD-WV
51-179-0001 (44-A)	O3(44201)	UV Absorption (047)	Continuous	Population	Urban	9/1/92	4/1/06	SLAMS	NAAQS Compliance	Stafford Co. - Widewater	-77.3704	38.4812	47900/	Washington-Arlington-Alexandria, DC-VA-MD-WV
51-179-0001 (44-A)	PM-10 (81102)	SSI HI VOL (062)	1/6	Population	Neighborhood	3/8/17	3/8/17	SLAMS	NAAQS Compliance	Widewater	-77.3704	38.4812	47900/	Washington-Arlington-Alexandria, DC-VA-MD-WV
51-113-0003 (N-35-A)	O3(44201)	UV Absorption (047)	Continuous	Background	Regional	5/1/83	4/1/95	CASTNET	EPA Regional	'Shenandoah Nat'l Park Big Meadows	-78.4347	38.5231	None	None
51-113-0003 (N-35-A)	PM2.5 (88502)	IMPROVE	1/3					IMPROVE	Haze	Big Meadows	-78.4347	38.5231	None	None
51-113-0003 (N-35-A)	PM2.5 (88501)	TEOM (701)	Continuous	Background	Regional	5/12/04	5/12/04	OTHER	AQI Forecasting	Big Meadows	-78.4347	38.5231	None	None
51-003-0001 (33-A)	O3(44201)	UV Absorption (047)	Continuous	Population	Regional	4/1/08	4/1/08	SLAMS	NAAQS Compliance	Albemarle Co. - Albemarle HS	- 78.5040	38.0766	16820/	Charlottesville, VA
51-003-0001 (33-A)	PM2.5 FRM* (88101)	Sequential (145)	1/3	Population	Neighborhood	4/1/08	12/27/16	SLAMS	NAAQS Compliance	Albemarle HS	- 78.5040	38.0766	16820/	Charlottesville, VA
51-003-0001 (33-A)	PM2.5 FEM (88101)	Broadband Spectroscopy (236)	Continuous	Population	Neighborhood	4/1/08	12/18/18	SLAMS	Research Monitor	Albemarle HS	- 78.5040	38.0766	16820/	Charlottesville, VA

There are no collocated monitors in AQCR IV

* **Per 58.10(b)(7) this site is suitable for comparison with the NAAQS as described in 40 CFR §58.30.**

** **Start Date is the date that sampling began . Beginning Date is the date that monitoring commenced using the current method code.**

'VA DEQ, AQCR V STATE CAPITOL, July 1, 2019

SITE I.D.	POLLUTANT MEASURED	METHOD OR INSTRUMENT	SAMPLING INTERVAL	MONITORING OBJECTIVE	SCALE	START** DATE	BEGINNING DATE	MONITOR NETWORK	MONITOR TYPE	LOCATION	LONGITUDE	LATITUDE	CBSAs/ MSAs	CBSAs/MSAs - Description
51-036-0002 (75-B)	O3(44201)	UV Absorption (047)	Continuous	Population	Urban	4/1/88	3/5/08	SLAMS	NAAQS Compliance	Charles City Co. - Route #608 Shirley Plantation	-77.2593	37.3444	40060/	Richmond, VA
51-036-0002 (75-B)	SO2 (42401)	Fluorescence (060)	Continuous	Highest Concentriation	Urban	1/1/92	5/15/07	SLAMS	NAAQS Compliance	Shirley Plantation	-77.2593	37.3444	40060/	Richmond, VA
51-036-0002 (75-B)	NO2 (42602)	Chemiluminescence (074)	Continuous	Population	Neighborhood	3/9/93	3/5/08	SLAMS	NAAQS Compliance	Shirley Plantation	-77.2593	37.3444	40060/	Richmond, VA
51-036-0002 (75-B)	PM2.5 FRM* (88101)	Sequential (145)	1/3	Population	Urban	1/1/99	12/12/16	SLAMS	NAAQS Compliance	Shirley Plantation	-77.2593	37.3444	40060/	Richmond, VA
51-041-0004 (71-H)	O3(44201)	UV Absorption (047)	Continuous	Population	Neighborhood	1/1/81	4/1/06	SLAMS	NAAQS Compliance	Chesterfield Co. - Beach Rd VDOT	-77.5936	37.3575	40060/	Richmond, VA
51-041-0004 (71-H)	PM2.5 FRM* (88101)	Sequential (145)	1/3	Population	Neighborhood	1/1/17	8/9/16	SLAMS	NAAQS Compliance	Beach Rod VDOT	-77.5936	37.3575	40060/	Richmond, VA
51-085-0003 (73-E)	O3(44201)	UV Absorption (047)	Continuous	Highest Concentriation	Urban	4/1/01	4/4/06	SLAMS	NAAQS Compliance	Hanover Co. - McClellan Road	-77.2188	37.6061	40060/	Richmond, VA
51-087-0014 (72-M)	O3(44201)	UV Absorption (047)	Continuous	Population	Neighborhood	6/23/81	4/1/05	SLAMS	NAAQS Compliance	Henrico Co. - MathScience Center	-77.4003	37.5565	40060/	Richmond, VA
51-087-0014 (72-M)	Trace CO (42101)	Gas Filter Corr. (554)	Continuous	Population	Neighborhood	10/12/10	10/12/10	NCore	NAAQS Compliance	MathScience Center	-77.4003	37.5565	40060/	Richmond, VA
51-087-0014 (72-M)	Trace SO2 (42401)	Fluorescence (560)	Continuous	Population	Neighborhood	01/01/82	10/12/10	NCore	NAAQS Compliance	MathScience Center	-77.4003	37.5565	40060/	Richmond, VA
51-087-0014 (72-M)	PM2.5 FRM* (88101)	Sequential (145)	1/3	Population	Neighborhood	1/1/99	12/30/16	SLAMS	NAAQS Compliance	MathScience Center	-77.4003	37.5565	40060/	Richmond, VA
51-087-0014 (72-M)	PM2.5 FEM (88101)	Broadband Spectroscopy (238)	Continuous	Population	Neighborhood	2/17/00	1/8/19	SPM	RESEARCH, AQI Forecasting	MathScience Center	-77.4003	37.5565	40060/	Richmond, VA
51-087-0014 (72-M)	PM2.5 Speciation (88502)	MetOne SASS (811,812)	1/3 Mini-Trends	Population	Neighborhood	1/1/04	1/1/04	CSN, NCore	EPA RESEARCH	MathScience Center	-77.4003	37.5565	40060/	Richmond, VA
51-087-0014 (72-M)	PM2.5 Carbon (88313)	URG 3000N (838)	1/3 Mini-Trends	Population	Neighborhood	1/1/10	1/1/10	CSN, NCore	EPA, RESEARCH	MathScience Center	-77.4003	37.5565	40060/	Richmond, VA
51-087-0014 (72-M)	PM-10 (81102)	SSI HI VOL (062)	1/6	Population	Neighborhood	7/23/08	7/23/08	SLAMS	NAAQS Compliance	MathScience Center	-77.4003	37.5565	40060/	Richmond, VA
51-087-0014 (72-M)	PM10-2.5 (86101)	Sequential (176)	1/3	Population	Neighborhood	6/1/10	6/1/10	NCore	RESEARCH	MathScience Center	-77.4003	37.5565	40060/	Richmond, VA
51-087-0014 (72-M)	Metals	SSI HI VOL (062)	1/6	Population	Neighborhood	11/1/08	11/1/08	NATTS	RESEARCH	MathScience Center	-77.4003	37.5565	40060/	Richmond, VA
51-087-0014 (72-M)	Carbonyl	TO-11A	1/6	Population	Neighborhood	11/1/08	11/1/08	NATTS	RESEARCH	MathScience Center	-77.4003	37.5565	40060/	Richmond, VA
51-087-0014 (72-M)	VOCs	TO-15	1/6	Population	Neighborhood	11/1/08	11/1/08	NATTS	RESEARCH	MathScience Center	-77.4003	37.5565	40060/	Richmond, VA
51-087-0014 (72-M)	PAH	TSP	1/6	Population	Neighborhood	11/1/08	11/1/08	NATTS	RESEARCH	MathScience Center	-77.4003	37.5565	40060/	Richmond, VA
51-087-0014 (72-M)	NOy (42600)	Chemiluminescence (674)	Continuous	Population	Neighborhood	1/1/12	1/1/12	NCore	RESEARCH	MathScience Center	-77.4003	37.5565	40060/	Richmond, VA
51-087-0014 (72-M)	NO2 Trace (42602)	Photolytic - Chemiluminescence (099)	Continuous	Vulnerable and Susceptible Population	Neighborhood	1/1/10	9/1/18	NCore	NAAQS Compliance	MathScience Center	-77.4003	37.5565	40060/	Richmond, VA
51-087-0014 (72-M)	NO2, True (42602)	CAPS (212)	Continuous	Population	Neighborhood	11/1/18	11/1/18	PAMS	RESEARCH	MathScience Center	-77.4003	37.5565	40060/	Richmond, VA
51-087-0014 (72-M)	Meteorological Instrumentation	Wind Speed, Humidity Barometric Pressure, Temp., Wind direction Rainfall, total Solar radiation, UV radiation,	Continuous	Population	Neighborhood	1/1/11	4/1/17	NCore/PAMS	REASEARCH	MathScience Center	-77.4003	37.5565	40060/	Richmond, VA
51-087-0015 (72-N)	PM2.5 FRM* (88101)	Sequential (145)	1/3	Population	Neighborhood	1/1/99	12/30/16	SLAMS	NAAQS Compliance	Henrico Co. - Piedmont DEQ	-77.5664	37.6713	40060/	Richmond, VA
51-670-0010 (154-M)	PM-10 (81102)	SSI HI VOL (062)	1/6	Population	Neighborhood	11/8/08	11/8/08	SLAMS	SLAMS	Hopewell - Carter G. Woodson Middle School	-77.2918	37.2896	40060/	Richmond, VA
51-670-0010 (154-M)	Metals	TSP/ICPMS (191)	1/6	Population	Neighborhood	11/8/08	11/8/08	UATM	RESEARCH	Carter G. Woodson	-77.2918	37.2896	40060/	Richmond, VA
51-670-0010 (154-M)	VOCs	TO-15	1/6	Population	Neighborhood	11/8/08	11/8/08	UATM	RESEARCH	Carter G. Woodson	-77.2918	37.2896	40060/	Richmond, VA
51-670-0010 (154-M)	Carbonyl	TO-11	1/6	Population	Neighborhood	11/8/08	11/8/08	UATM	RESEARCH	Carter G. Woodson	-77.2918	37.2896	40060/	Richmond, VA
51-760-0025 (158-X)	NO2 (42602)	Chemiluminescence (074)	Continuous	Source Oriented	Microscale	10/1/13	10/1/13	SLAMS	NEAR-ROAD	City of Richmond - Joseph Bryan Park	77.4693	37.5909	40060/	Richmond, VA
	CO (42101)	Gas Filter Corr. (054)	Continuous	Source Oriented	Microscale	10/1/13	10/1/13	SLAMS	NEAR-ROAD	Joseph Bryan Park	77.4693	37.5909	40060/	Richmond, VA
	PM2.5 FEM (88101)	Beta Attenuation (183)	Continuous	Source Oriented	Microscale	1/1/15	1/1/15	SLAMS	NEAR-ROAD	Joseph Bryan Park	77.4693	37.5909	40060/	Richmond, VA
	PM2.5 FRM* (88101)	Sequential (145)	1/3	Source Oriented	Microscale	7/4/16	7/4/16	SLAMS	NEAR-ROAD	Joseph Bryan Park	77.4693	37.5909	40060/	Richmond, VA

There are 3 collocated monitors in AQCR V. At Station 72-M, 510870014 - collocated PM2.5 FRM and Collocated Hi Vol PM10 and a collocated PM2.5 Beta Attenuation monitor at 158-X, 517600025 .

* **Per 58.10(b)(7) this site is suitable for comparison with the NAAQS as described in 40 CFR §58.30.**

** **Start Date is the date that sampling began . Beginning Date is the date that monitoring commenced using the current method code.**

SITE I.D.	POLLUTANT MEASURED	METHOD OR INSTRUMENT	SAMPLING INTERVAL	MONITORING OBJECTIVE	SCALE	START** DATE	BEGINNING DATE	MONITOR NETWORK	MONITOR TYPE	LOCATION	LONGITUDE	LATITUDE	CBSAs/ MSAs	CBSAs/MSAs - Description
51-650-0008 (179-K)	O3(44201)	UV Absorption (047)	Continuous	Population	Neighborhood	4/2/10	4/2/10	SLAMS	NAAQS Compliance	Hampton City - NASA Langley CAPABLE Site	-76.3870	37.1037	47260/	Virginia Beach-Norfolk-Newport News, VA-NC
51-650-0008 (179-K)	SO2 (42401)	Fluorescence (060)	Continuous	Population	Neighborhood	6/23/10	6/23/10	SLAMS	NAAQS Compliance	NASA Langley	-76.3870	37.1037	47260/	Virginia Beach-Norfolk-Newport News, VA-NC
51-650-0008 (179-K)	NO2 (42602)	Chemiluminescence (074)	Continuous	Population	Neighborhood	4/8/10	4/8/10	SLAMS	NAAQS Compliance	NASA Langley	-76.3870	37.1037	47260/	Virginia Beach-Norfolk-Newport News, VA-NC
51-650-0008 (179-K)	CO (42101)	Gas Filter Corr. (054)	Continuous	Population	Neighborhood	6/23/10	6/23/10	SLAMS	NAAQS Compliance	NASA Langley	-76.3870	37.1037	47260/	Virginia Beach-Norfolk-Newport News, VA-NC
51-650-0008 (179-K)	PM2.5 FRM* (88101	Sequential (145)	1/3	Population	Neighborhood	6/23/10	12/28/16	SLAMS	NAAQS Compliance	NASA Langley	-76.3870	37.1037	47260/	Virginia Beach-Norfolk-Newport News, VA-NC
51-650-0008 (179-K)	PM2.5 FEM (88101)	Beta Attenuation (183)	Continuous	Population	Neighborhood	6/23/10	4/10/17	SPM	DATA Comparison	NASA Langley	-76.3870	37.1037	47260/	Virginia Beach-Norfolk-Newport News, VA-NC
51-650-0008 (179-K)	PM10 (81102)	SSI HI VOL (062)	1/6	Population	Neighborhood	6/13/10	6/13/10	SLAMS	NAAQS Compliance	NASA Langley	-76.3870	37.1037	47260/	Virginia Beach-Norfolk-Newport News, VA-NC
51-710-0024 (181-A1)	SO2 (42401)	Pulsed Fluorescence (100)	Continuous	Population	Neighborhood	10/27/06	4/1/18	SLAMS	NAAQS Compliance	Norfolk City - NOAA Storage Facility	-76.3014	36.8556	47260/	Virginia Beach-Norfolk-Newport News, VA-NC
51-710-0024 (181-A1)	NO2 (42602)	Chemiluminescence (074)	Continuous	Population	Neighborhood	1/23/07	1/23/07	SLAMS	NAAQS Compliance	NOAA Facility	-76.3014	36.8556	47260/	Virginia Beach-Norfolk-Newport News, VA-NC
51-710-0024 (181-A1)	CO (42101)	Gas Filter Corr. (054)	Continuous	Population	Neighborhood	10/27/06	1/06/11	SLAMS	NAAQS Compliance	NOAA Facility	-76.3014	36.8556	47260/	Virginia Beach-Norfolk-Newport News, VA-NC
51-710-0024 (181-A1)	PM10 (81102)	SSI HI VOL (062)	1/6	Population	Neighborhood	6/21/97	6/21/97	SLAMS	NAAQS Compliance	NOAA Facility	-76.3014	36.8556	47260/	Virginia Beach-Norfolk-Newport News, VA-NC
51-710-0024 (181-A1)	PM2.5 FRM* (88101	Sequential (145)	1/3	Population	Neighborhood	1/1/99	12/28/16	SLAMS	NAAQS Compliance	NOAA Facility	-76.3014	36.8556	47260/	Virginia Beach-Norfolk-Newport News, VA-NC
51-800-0004 (183-D)	O3(44201)	UV Absorption (047)	Continuous	Population	Urban	3/24/87	4/1/06	SLAMS	NAAQS Compliance	Suffolk City - Tidewater Community College	-76.4381	36.9012	47260/	Virginia Beach-Norfolk-Newport News, VA-NC
51-800-0005 (183-F)	O3(44201)	UV Absorption (047)	Continuous	Population	Urban	4/1/91	4/1/05	SLAMS	NAAQS Compliance	Suffolk City - Tidewater Research Station, Holland	-76.7308	36.6653	47260/	Virginia Beach-Norfolk-Newport News, VA-NC
51-810-0008 (184-J)	PM2.5 FRM* (88101	Sequential (145)	1/3	Population	Neighborhood	1/1/99	12/30/16	SLAMS	SLAMS	VA Beach DEQ Office	-76.1812	36.8419	47260/	Virginia Beach-Norfolk-Newport News, VA-NC
51-810-0008 (184-J)	Metals	TSP/ICPMS (191)	1/6	Background	Neighborhood	8/14/05	8/2/05	UATM	RESEARCH	VA Beach DEQ Office	-76.1812	36.8419	47260/	Virginia Beach-Norfolk-Newport News, VA-NC

There are two collocated monitors in AQCR VI. Collocated PM10 at 181-A1, 517100024, the NOAA Storage Facility in Norfolk, and collocated PM2.5 (FEM and FRM) at 179-K, 516500008, NASA Langley.

* **Per 58.10(b)(7) this site is suitable for comparison with the NAAQS as described in 40 CFR §58.30.**

** **Start Date is the date that sampling began . Beginning Date is the date that monitoring commenced using the current method code.**

SITE I.D.	POLLUTANT MEASURED	METHOD OR INSTRUMENT	SAMPLING INTERVAL	MONITORING OBJECTIVE	SCALE	START** DATE	G DATE	MONITOR NETWORK	MONITOR TYPE	LOCATION	LONGITUDE	LATITUDE	CBSAs/ MSAs	CBSAs/MSAs - Description
51-013-0020 (47-T)	O3(44201)	UV Absorption (047)	Continuous	Population	Neighborhood	1/1/78	4/1/05	SLAMS	NAAQS Compliance	Arlington - Aurora Hills Visitors Center	-77.0592	38.8577	47900/	Washington-Arlington-Alexandria, DC-VA-MD-WV
51-013-0020 (47-T)	NO2 (42602)	Chemiluminescence (074	Continuous	Population	Neighborhood	1/1/78	5/25/06	SLAMS	NAAQS Compliance	Aurora Hills	-77.0592	38.8577	47900/	Washington-Arlington-Alexandria, DC-VA-MD-WV
51-013-0020 (47-T)	CO (42101)	Gas Filter Corr. (054)	Continuous	Population	Neighborhood	1/1/78	5/1/09	SLAMS	NAAQS Compliance	Aurora Hills	-77.0592	38.8577	47900/	Washington-Arlington-Alexandria, DC-VA-MD-WV
51-013-0020 (47-T)	PM2.5 FRM* (88101)	Sequential (145)	1/3	Population	Neighborhood	1/1/99	12/30/16	SLAMS	NAAQS Compliance	Aurora Hills	-77.0592	38.8577	47900/	Washington-Arlington-Alexandria, DC-VA-MD-WV
51-059-0030 (46-B9)	O3(44201)	UV Absorption (047)	Continuous	Population	Urban	7/1/98	4/1/06	SLAMS	NAAQS Compliance	Fairfax - Lee District Park	-77.1047	38.7734	47900/	Washington-Arlington-Alexandria, DC-VA-MD-WV
51-059-0030 (46-B9)	SO2 (42401)	Fluorescence (060)	Continuous	Population	Neighborhood	01/08/14	01/08/14	SLAMS	NAAQS Compliance	Lee District park	-77.1047	38.7734	47900/	Washington-Arlington-Alexandria, DC-VA-MD-WV
51-059-0030 (46-B9)	PM2.5 FRM* (88101)	Sequential (145)	Daily	Population	Neighborhood	1/1/99	12/30/16	SLAMS	NAAQS Compliance	Lee District park	-77.1047	38.7734	47900/	Washington-Arlington-Alexandria, DC-VA-MD-WV
51-059-0030 (46-B9)	PM2.5 (88501)	TEOM (701)	Continuous	Population	Neighborhood	6/22/10	6/22/10	OTHER	AQI Forecasting	Lee District park	-77.1047	38.7734	47900/	Washington-Arlington-Alexandria, DC-VA-MD-WV
51-059-0030 (46-B9)	PM10 (81102)	SSI HI VOL (062)	1/6	Population	Neighborhood	5/6/15	5/6/15	SLAMS	NAAQS Compliance	Lee District park	-77.1047	38.7734	47900/	Washington-Arlington-Alexandria, DC-VA-MD-WV
51-107-1005 (38-I)	O3(44201)	UV Absorption (047)	Continuous	Population	Neighborhood	4/4/98	8/25/05	SLAMS	NAAQS Compliance	Loudoun Co. - Broad Run HS	-77.4893	39.0247	47900/	Washington-Arlington-Alexandria, DC-VA-MD-WV
51-107-1005 (38-I)	NO2 (42602)	Chemiluminescence (074	Continuous	Population	Neighborhood	4/4/98	3/23/06	SLAMS	NAAQS Compliance	Broad Run H.S.	-77.4893	39.0247	47900/	Washington-Arlington-Alexandria, DC-VA-MD-WV
51-107-1005 (38-I)	PM2.5 FRM* (88101)	Sequential (145)	1/3	Population	Neighborhood	1/1/99	12/30/16	SLAMS	NAAQS Compliance	Broad Run H.S.	-77.4893	39.0247	47900/	Washington-Arlington-Alexandria, DC-VA-MD-WV
51-153-0009 (45-L)	O3(44201)	UV Absorption (047)	Continuous	Population	Neighborhood	4/1/91	4/1/06	SLAMS	SLAMS	Prince Wm. Co. - Long Park	-77.6346	38.8529	47900/	Washington-Arlington-Alexandria, DC-VA-MD-WV
51-153-0009 (45-L)	NO2 (42602)	Chemiluminescence (074))	Continuous	Population	Neighborhood	4/1/94	12/13/05	SLAMS	SLAMS	Long Park	-77.6346	38.8529	47900/	Washington-Arlington-Alexandria, DC-VA-MD-WV
51-510-0020 (L-126-H)	PM10 (81102)	SSI HI VOL (062)	1/3	Population	Source Oriented	6/4/06	1/1/09	SPM	OTHER	Alexandria - Tucker ES	-77.1269	38.8049	47900/	Washington-Arlington-Alexandria, DC-VA-MD-WV
51-059-0031 (46-C2)	NO2 (42602)	Chemiluminescence (074	Continuous	Source Orientec	Microscale	4/5/16	4/5/16	SLAMS	NEAR-ROAD	Fairfax County Backlick Rd. Park	-77.1835	38.7684	47900/	Washington-Arlington-Alexandria, DC-VA-MD-WV
51-059-0031 (46-C2)	CO (42101)	Gas Filter Corr. (054)	Continuous	Source Orientec	Microscale	4/5/16	4/5/16	SLAMS	NEAR-ROAD	Backlick Rd.	-77.1835	38.7684	47900/	Washington-Arlington-Alexandria, DC-VA-MD-WV
51-059-0031 (46-C2)	PM2.5 FEM (88101)	Beta Attenuation (183)	Continuous	Source Orientec	Microscale	4/5/16	4/5/16	SLAMS	NEAR-ROAD	Backlick Rd.	-77.1835	38.7684	47900/	Washington-Arlington-Alexandria, DC-VA-MD-WV

There is 1 collocated monitor in AQCR7.
A collocated PM2.5 FRM is located at Station 47-T, 510130020, Aurora Hills Visitor Center, Arlington

* **Per 58.10(b)(7) this site is suitable for comparison with the NAAQS as described in 40 CFR §58.30.**

** **Start Date is the date that sampling began . Beginning Date is the date that monitoring commenced using the current method code.**

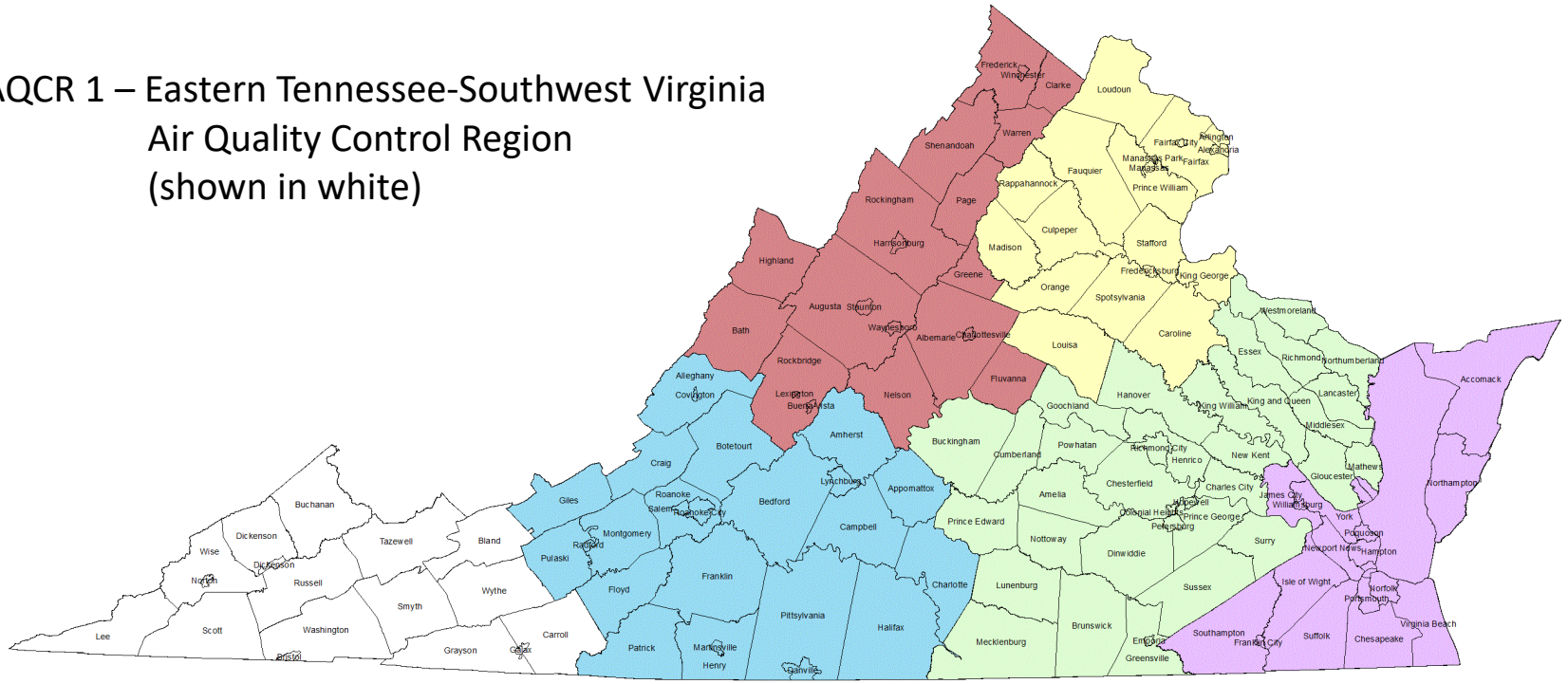
SITE I.D.	POLLUTANT MEASURED	METHOD OR INSTRUMENT	SAMPLING INTERVAL	MONITORING OBJECTIVE	SCALE	BEGINNING DATE	MONITOR NETWORK	MONITOR TYPE	LOCATION	LONGITUDE	LATITUDE	CBSAs/ MSAs
51-147-9991 PED108	O3(44201)	UV Adsorption (047)	Continuous	Highest Concentration	Regional	1/1/2011	CASTNET	EPA	Prince Edward Gallion State Forest Burkeville VA	-78.307067	37.165222	NA
51-071-9991 VPI120	O3(44201)	UV Adsorption (047)	Continuous	Highest Concentration	Regional	4/1/2011	CASTNET	EPA	Giles County 1856 Horton Lane Newport, VA	-80.55751	37.329832	None

ATTACHMENT 2
OVERHEAD VIEWS OF MONITORING SITES WITH IDENTIFYING ADDRESS INFORMATION

Each overhead view contains a brief discussion of the original purpose for the site being located where it is. In some cases the current reason for the siting has changed.

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

AQCR 1 – Eastern Tennessee-Southwest Virginia
Air Quality Control Region
(shown in white)



Counties: Bland, Buchanan, Carroll, Dickenson, Grayson, Lee, Russell, Scott, Smyth, Tazewell, Washington, Wise, Wythe

Cities: Bristol, Galax, Norton

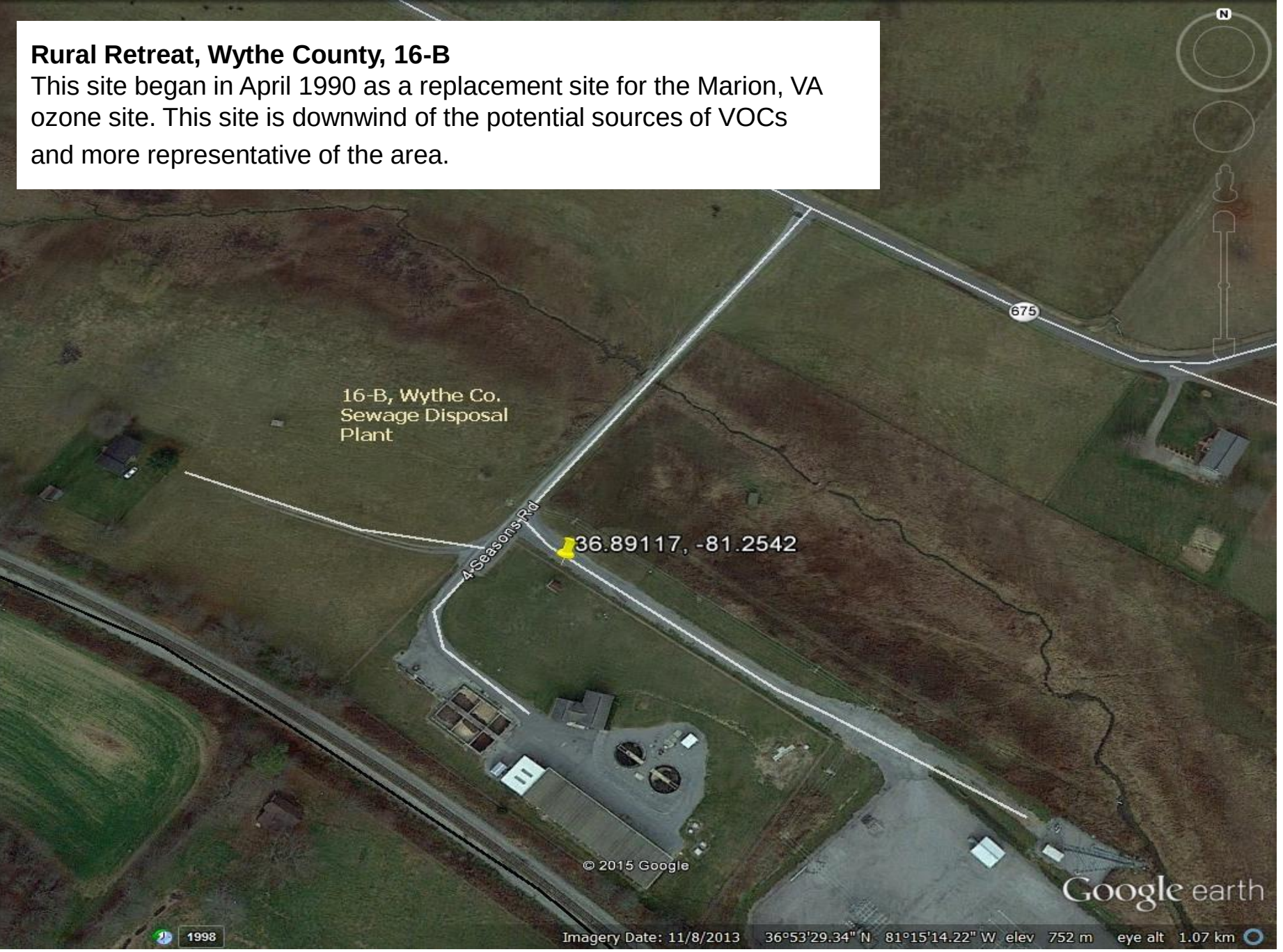
CBSA/MSA: 28700 – Kingsport-Bristol-Bristol, TN-VA

Gladeville Elementary School, Galax, 23-A

TSP sampler was installed in June 1983 as a replacement site for a close by monitoring location that was unduly influenced by a nearby source. The TSP was removed January 1989 and a PM10 sampler was installed in its place.

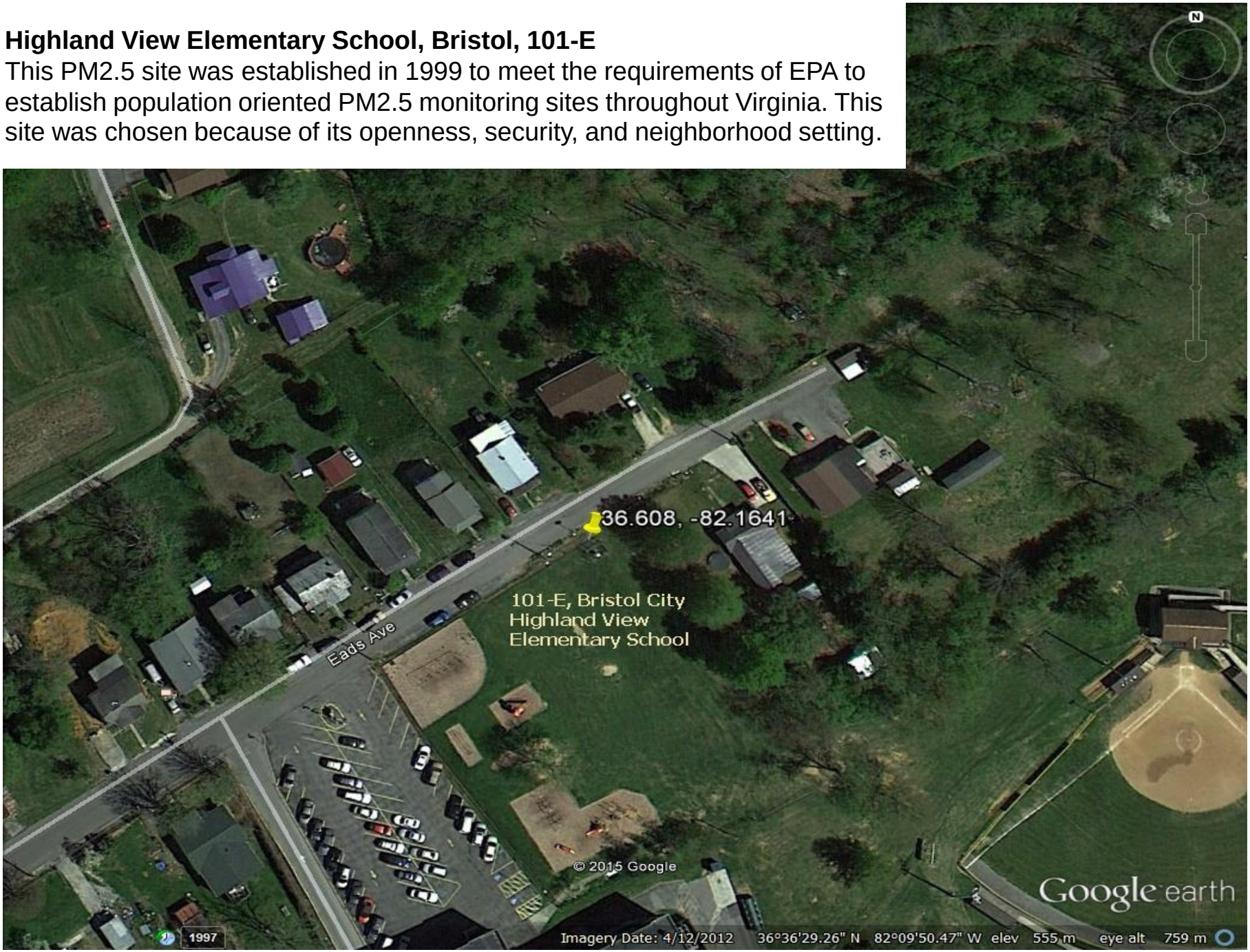
Rural Retreat, Wythe County, 16-B

This site began in April 1990 as a replacement site for the Marion, VA ozone site. This site is downwind of the potential sources of VOCs and more representative of the area.



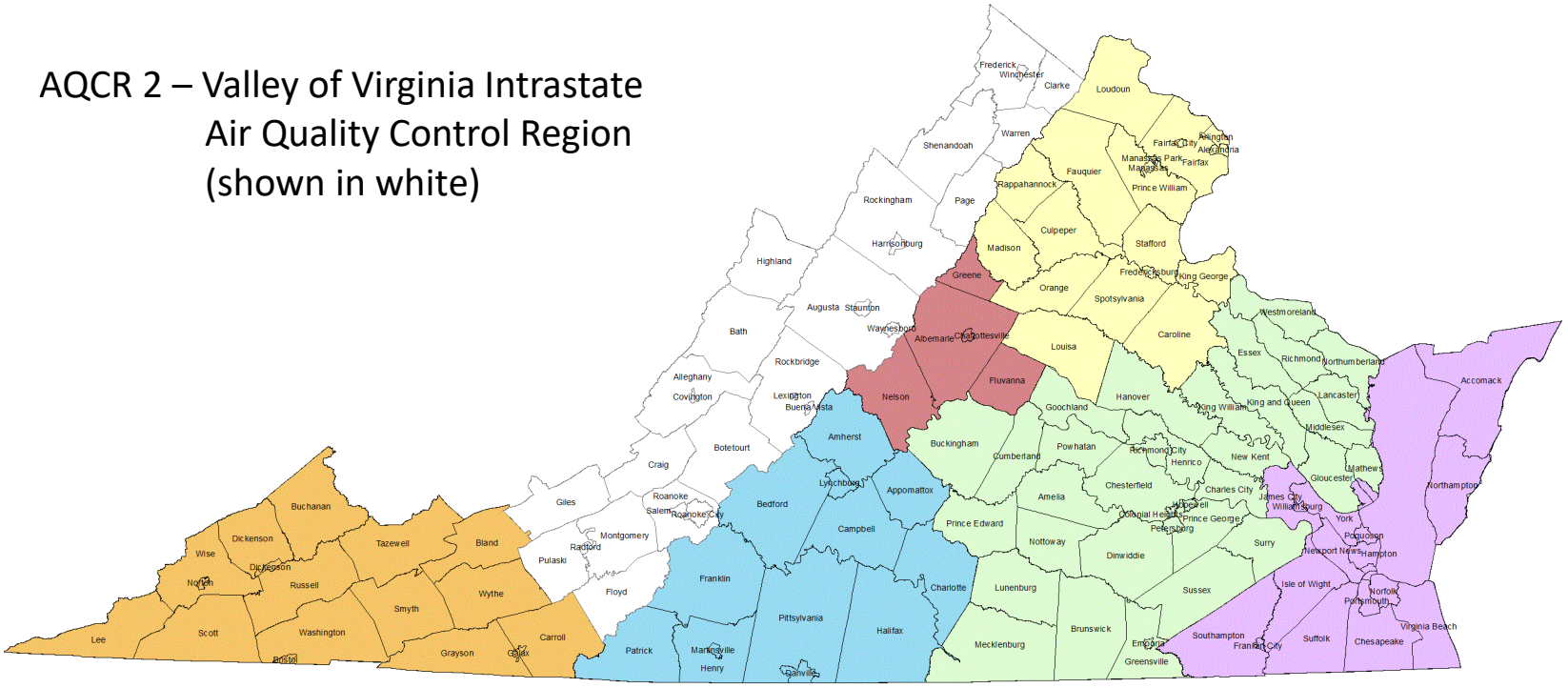
Highland View Elementary School, Bristol, 101-E

This PM2.5 site was established in 1999 to meet the requirements of EPA to establish population oriented PM2.5 monitoring sites throughout Virginia. This site was chosen because of its openness, security, and neighborhood setting.



VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

AQCR 2 – Valley of Virginia Intrastate
Air Quality Control Region
(shown in white)



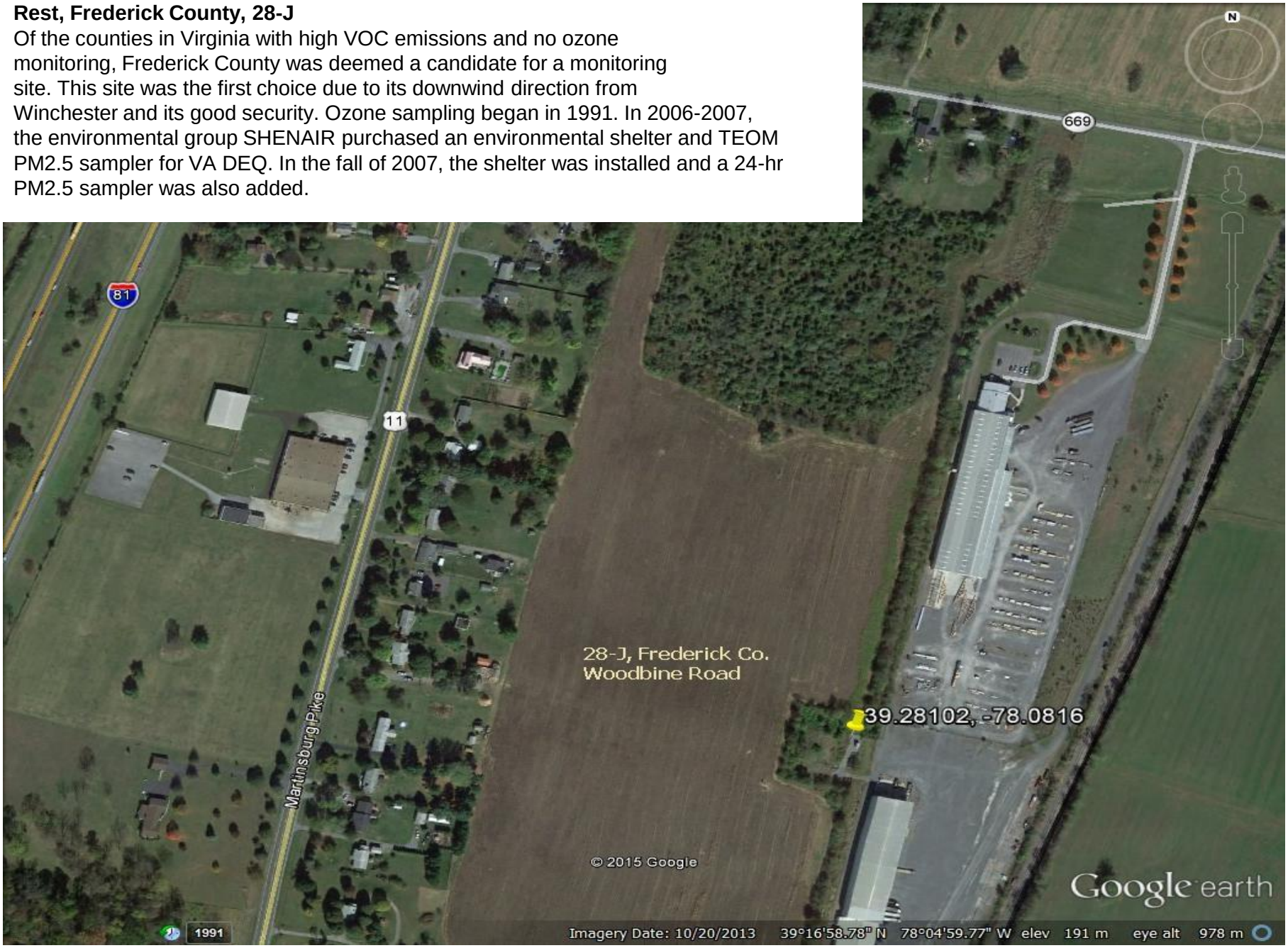
Counties: Alleghany, Augusta, Bath, Botetourt, Clarke, Craig, Floyd, Frederick, Giles, Highland, Montgomery, Page, Pulaski, Roanoke, Rockbridge, Rockingham, Shenandoah, Warren

Cities: Buena Vista, Clifton Forge, Covington, Harrisonburg, Lexington, Radford, Roanoke, Salem, Staunton, Waynesboro, Winchester

CBSA/MSA: 49020 – Winchester VA-WV; 40220 – Roanoke, VA; 25500 – Harrisonburg, VA

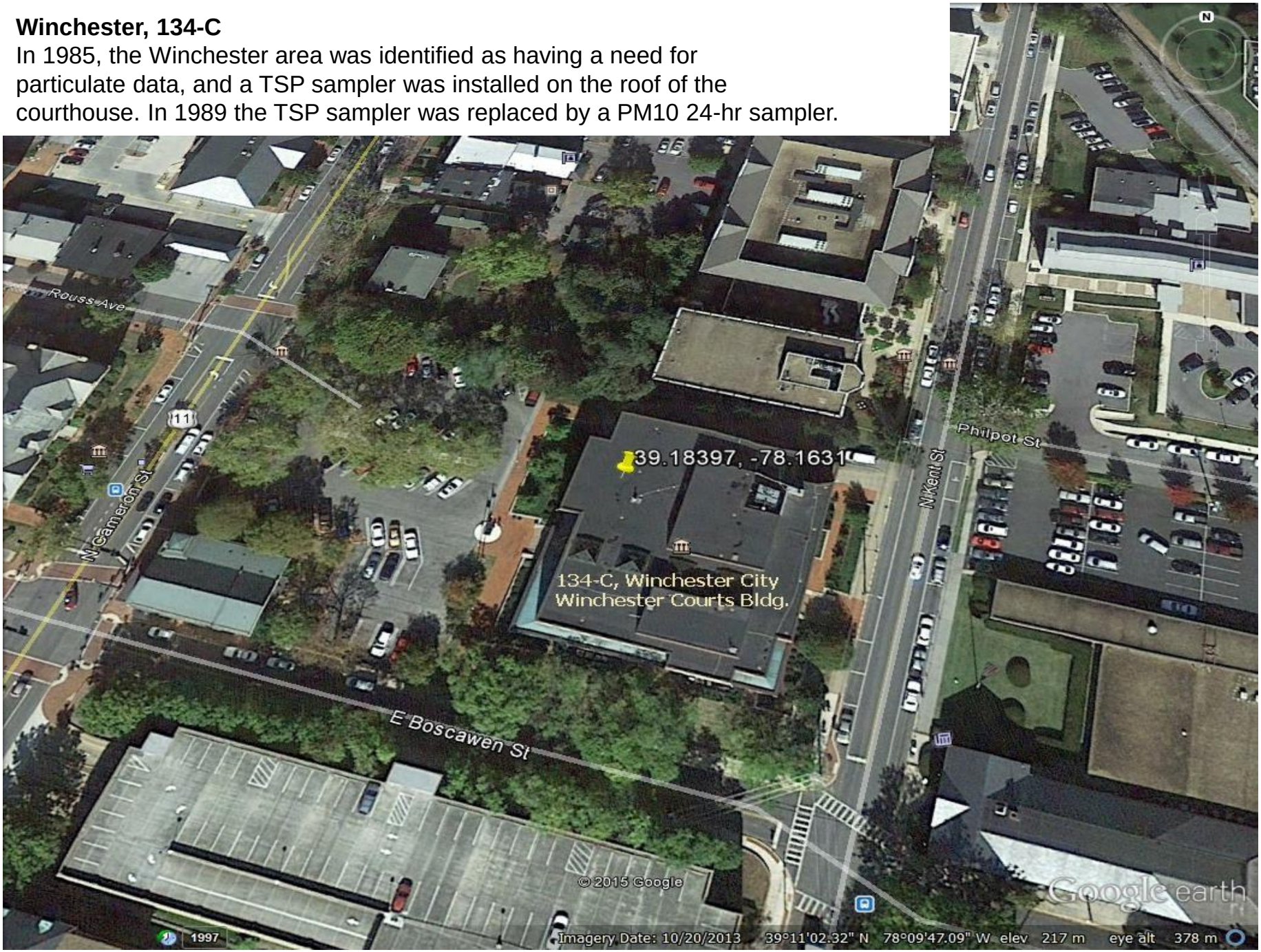
Rest, Frederick County, 28-J

Of the counties in Virginia with high VOC emissions and no ozone monitoring, Frederick County was deemed a candidate for a monitoring site. This site was the first choice due to its downwind direction from Winchester and its good security. Ozone sampling began in 1991. In 2006-2007, the environmental group SHENAIR purchased an environmental shelter and TEOM PM2.5 sampler for VA DEQ. In the fall of 2007, the shelter was installed and a 24-hr PM2.5 sampler was also added.



Winchester, 134-C

In 1985, the Winchester area was identified as having a need for particulate data, and a TSP sampler was installed on the roof of the courthouse. In 1989 the TSP sampler was replaced by a PM10 24-hr sampler.



Herman Horn Elementary School, Vinton, 19-A6

This site was installed at the request of locality (Roanoke County Health Department). NO2 sampling began in December 1980 and Ozone was added in August 1981. In January 1987, SO2 and CO analyzers were added in effort to consolidate monitoring efforts in the Roanoke area. In 2013, PM2.5 24-hr and continuous samplers were added.

Natural Bridge Station, 21-C

This site is a cooperative effort between VA DEQ and the National Forest Service. Sampling began in April 1999. The current shelter was supplied by the Forest Service, and the sampling equipment was supplied by VA DEQ. The area is rural, open and has good security.

VDOT, Rockingham County, 26-F

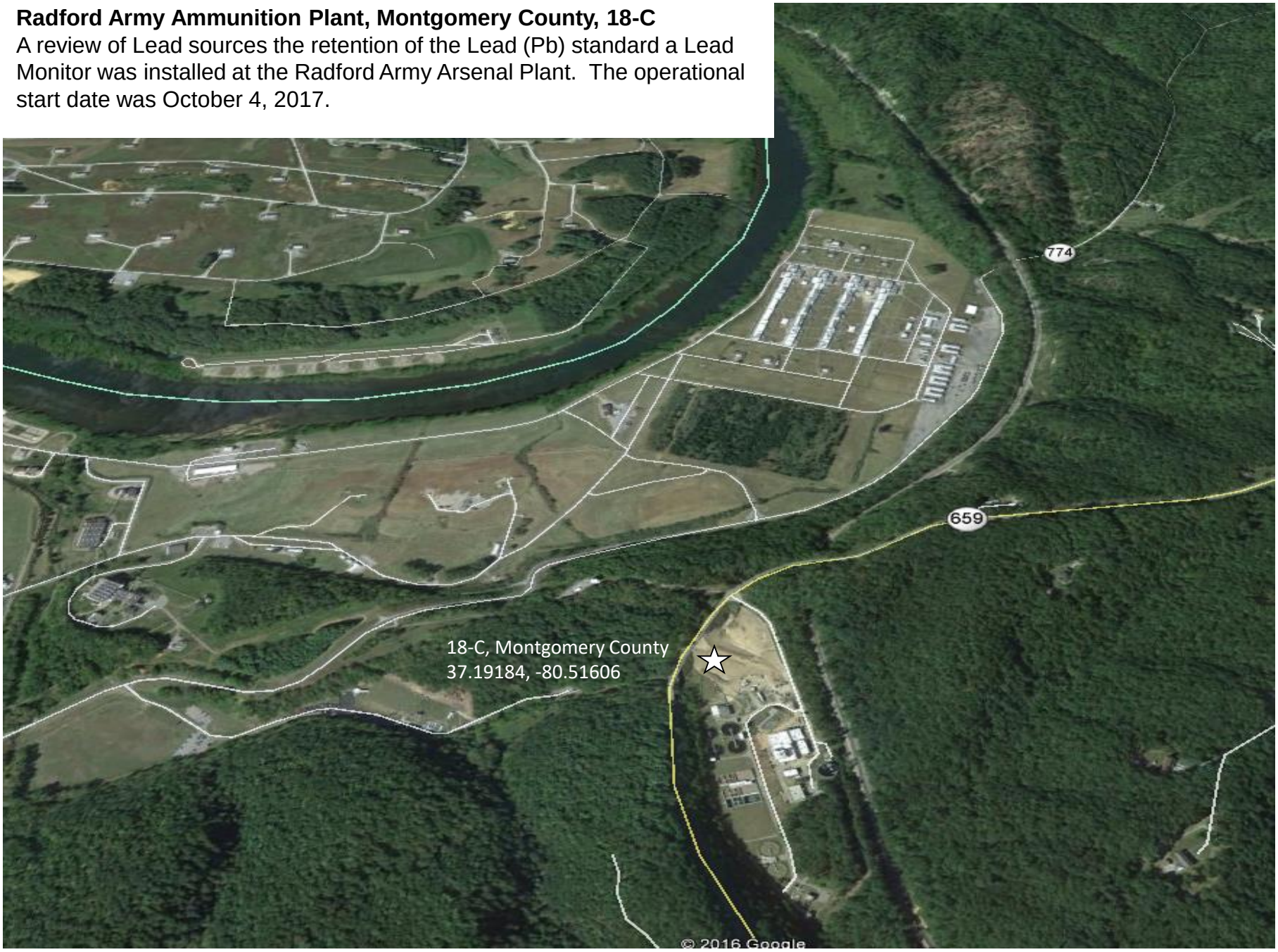
This site was established as a replacement for a monitoring site to the south of the city of Harrisonburg. This site is ten miles north of the city and began in April 2004. On the property of the VDOT it is situated between Route 11 and I-81, with open air flow and good security.

Salem High School, Salem, 110-C
PM2.5 sampling on the roof of the Salem Fire Department stopped in 2006 when roof repairs and construction reconfigured the roof making sampling at this location untenable. After a long search, a spot at Salem High School was found that offered free air flow, good accessibility and very good security. The site was installed and began operation in late 2008.

Mario Industries, Roanoke, 109-N

Lead sampler was installed in late 2014 as a replacement to the Lead monitoring site at Cherry Hill Circle, Roanoke. Site is situated in Roanoke River valley as a source specific Lead (Pb) monitor.

Radford Army Ammunition Plant, Montgomery County, 18-C
A review of Lead sources the retention of the Lead (Pb) standard a Lead Monitor was installed at the Radford Army Arsenal Plant. The operational start date was October 4, 2017.

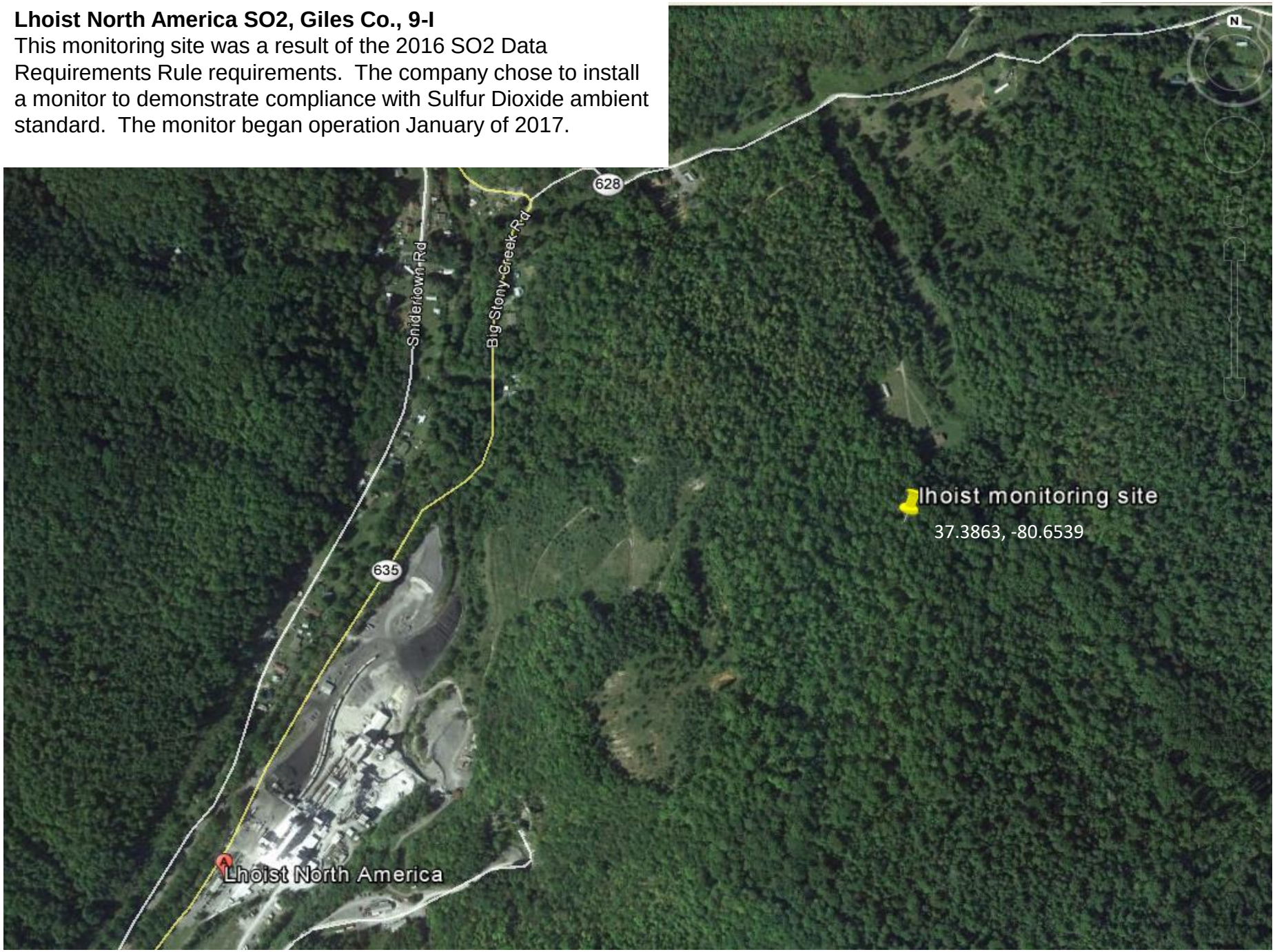


Roanoke Cement SO2, Botetourt Co., 20-E

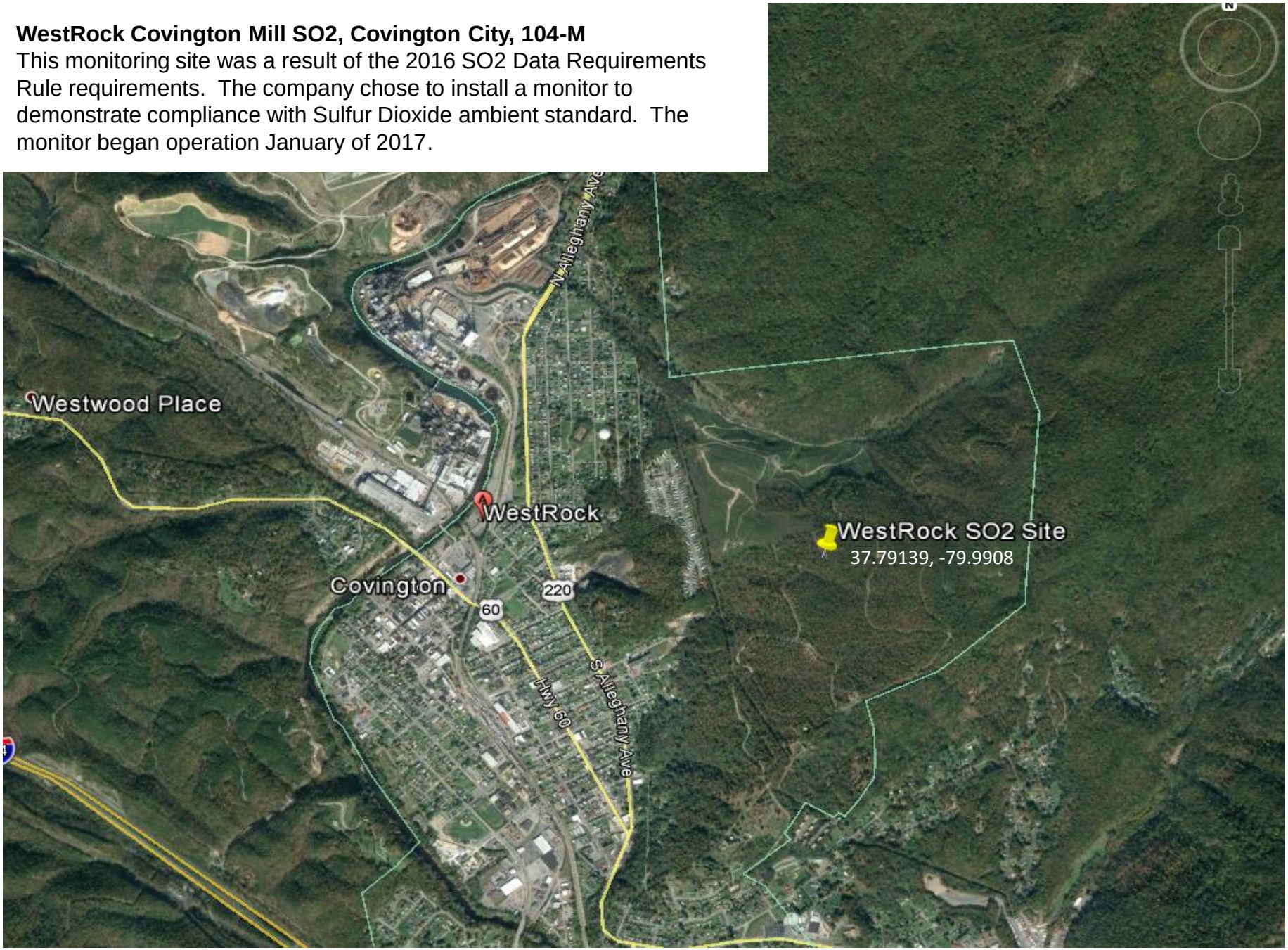
This monitoring site was a result of the 2016 SO2 Data Requirements Rule requirements. The company chose to install a monitor to demonstrate compliance with Sulfur Dioxide ambient standard. The monitor began operation January of 2017.

Lhoist North America SO2, Giles Co., 9-I

This monitoring site was a result of the 2016 SO2 Data Requirements Rule requirements. The company chose to install a monitor to demonstrate compliance with Sulfur Dioxide ambient standard. The monitor began operation January of 2017.

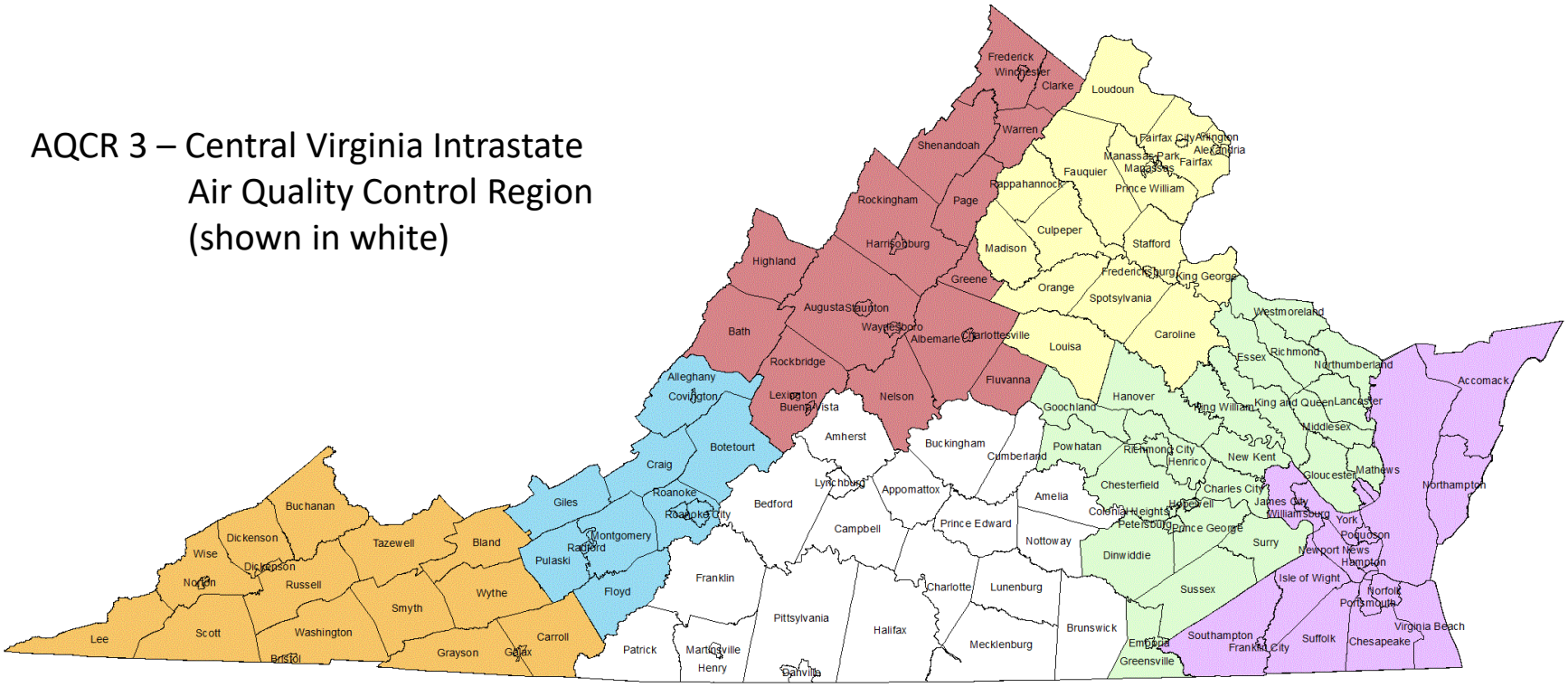


WestRock Covington Mill SO2, Covington City, 104-M
This monitoring site was a result of the 2016 SO2 Data Requirements Rule requirements. The company chose to install a monitor to demonstrate compliance with Sulfur Dioxide ambient standard. The monitor began operation January of 2017.



VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

AQCR 3 – Central Virginia Intrastate
Air Quality Control Region
(shown in white)



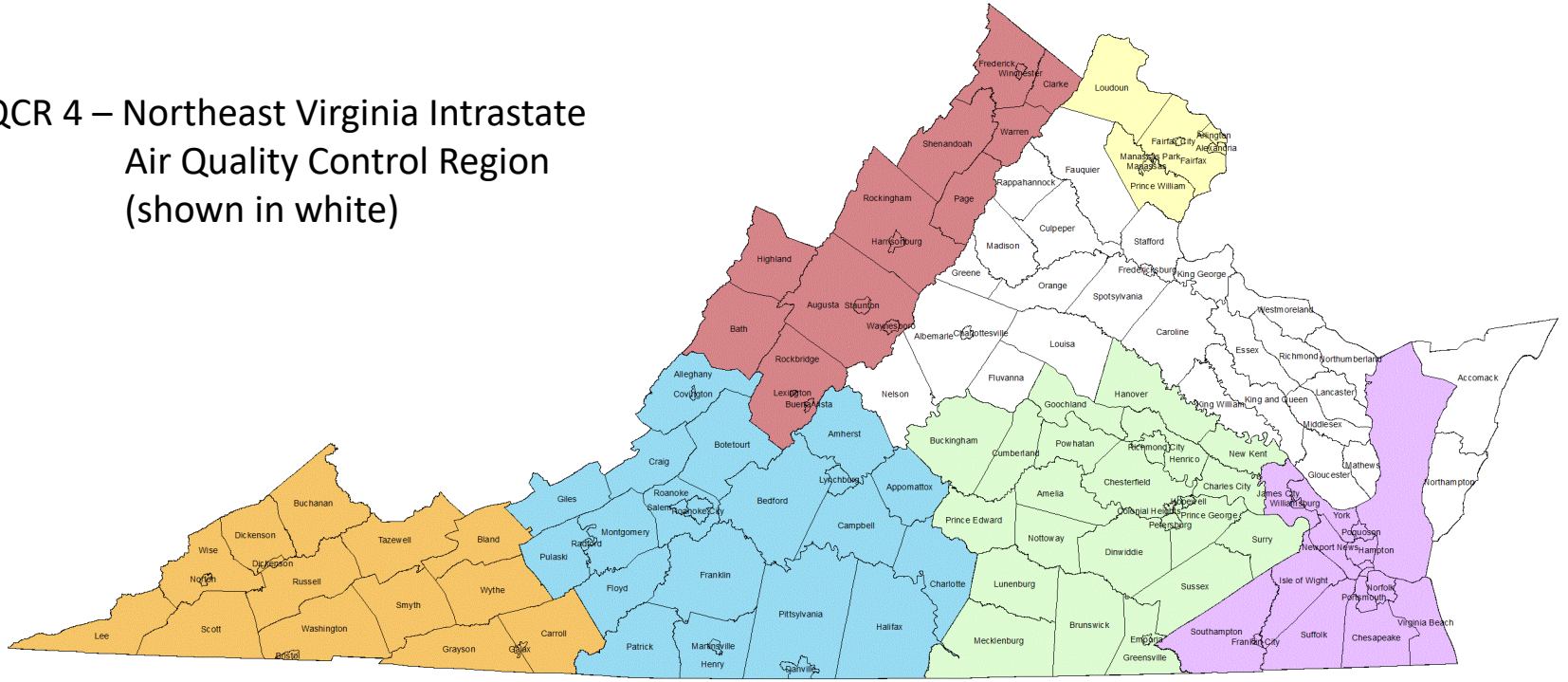
CBSA/MSA: 31340 – Lynchburg, VA

Leesville Road Water Tower, Lynchburg, 155-Q

When the PM2.5 network was put together, it was determined a sampler was needed in Lynchburg. A sampler was installed but it was found that the site had electrical problems that could not be resolved. A secure location was found on city property and the PM2.5 sampler began operation at this site in April 2003.

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

AQCR 4 – Northeast Virginia Intrastate
Air Quality Control Region
(shown in white)



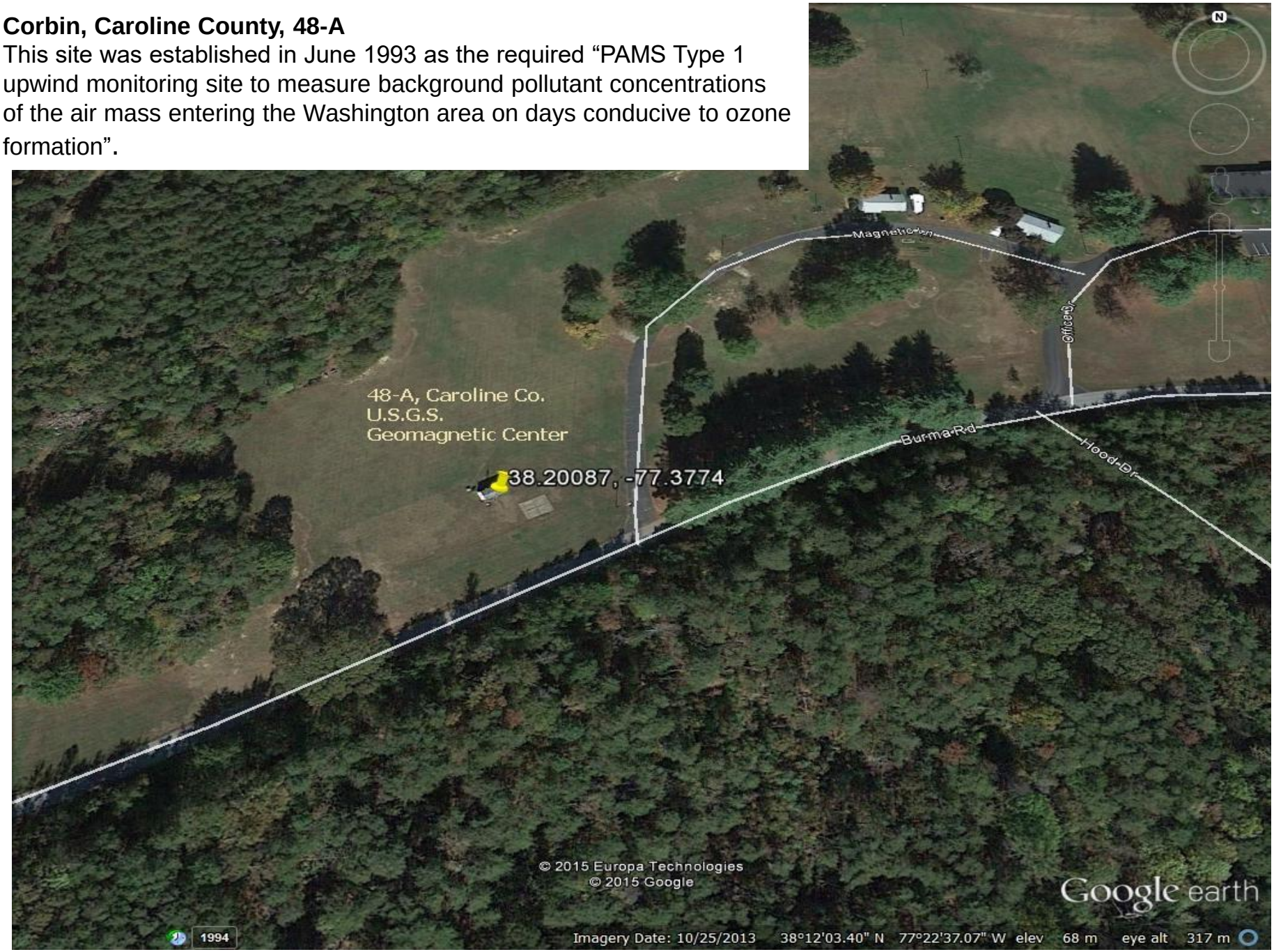
Counties: Accomack, Albemarle, Caroline, Culpeper, Essex, Fauquier, Fluvanna, Gloucester, Greene, King and Queen, King George, King William, Lancaster, Louisa, Madison, Mathews, Middlesex, Nelson, Northampton, Northumberland, Orange, Rappahannock, Richmond, Spotsylvania, Stafford, Westmoreland

Cities: Charlottesville, Fredericksburg

CBSA/MSA: 40060 – Richmond, VA; 16820 – Charlottesville, VA; 47900 – Washington-Arlington-Alexandria, DC-VA-MD-WV

Corbin, Caroline County, 48-A

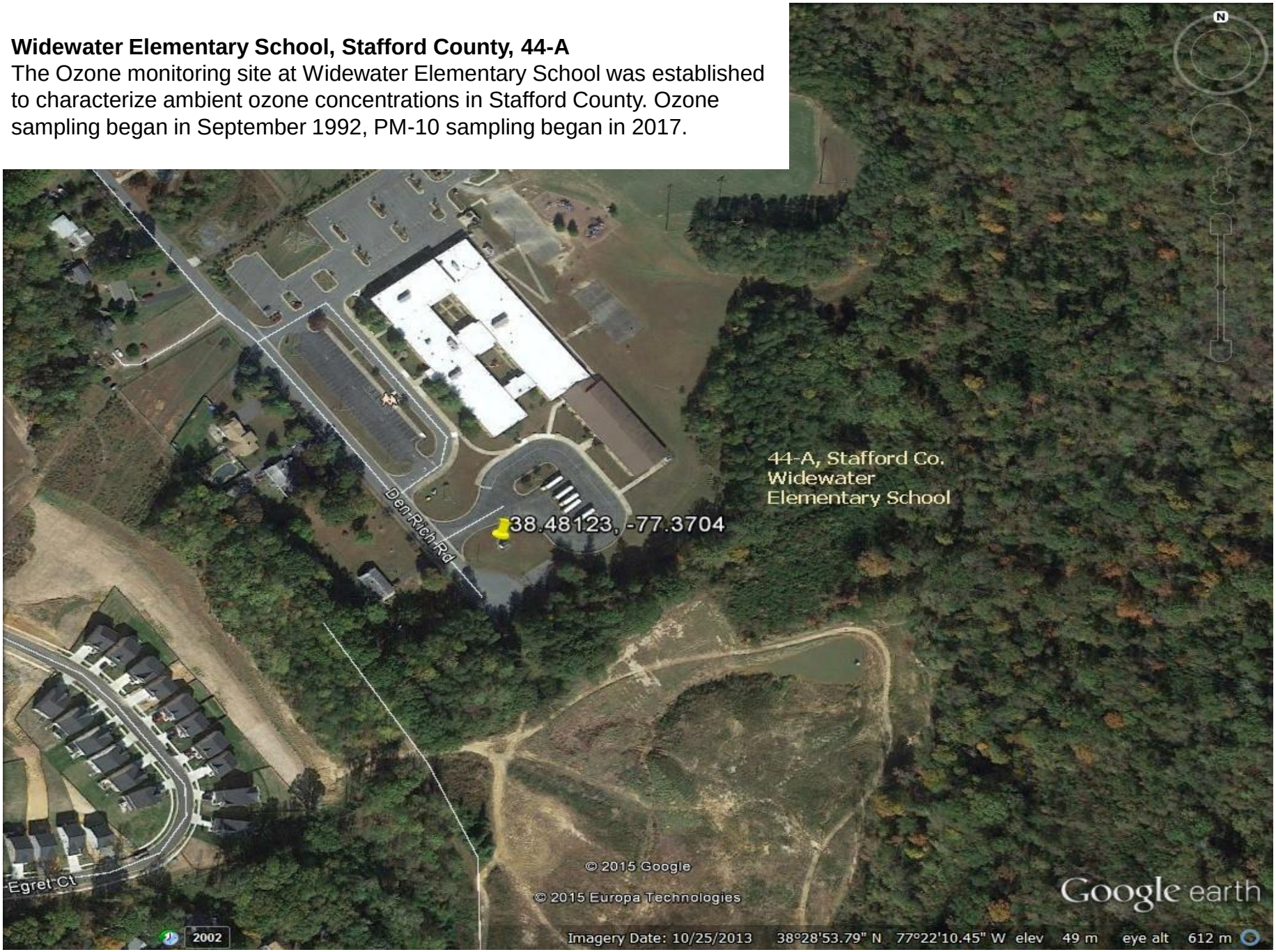
This site was established in June 1993 as the required “PAMS Type 1 upwind monitoring site to measure background pollutant concentrations of the air mass entering the Washington area on days conducive to ozone formation”.



Sumerduck, Fauquier County, 37-B
This ozone monitoring site was established in 1981 as an upwind site for the Washington DC metropolitan area. It is situated in the correct upwind quadrant, the proper distance away, and on state property.

Widewater Elementary School, Stafford County, 44-A

The Ozone monitoring site at Widewater Elementary School was established to characterize ambient ozone concentrations in Stafford County. Ozone sampling began in September 1992, PM-10 sampling began in 2017.



Big Meadows, Shenandoah National Park, 35-A

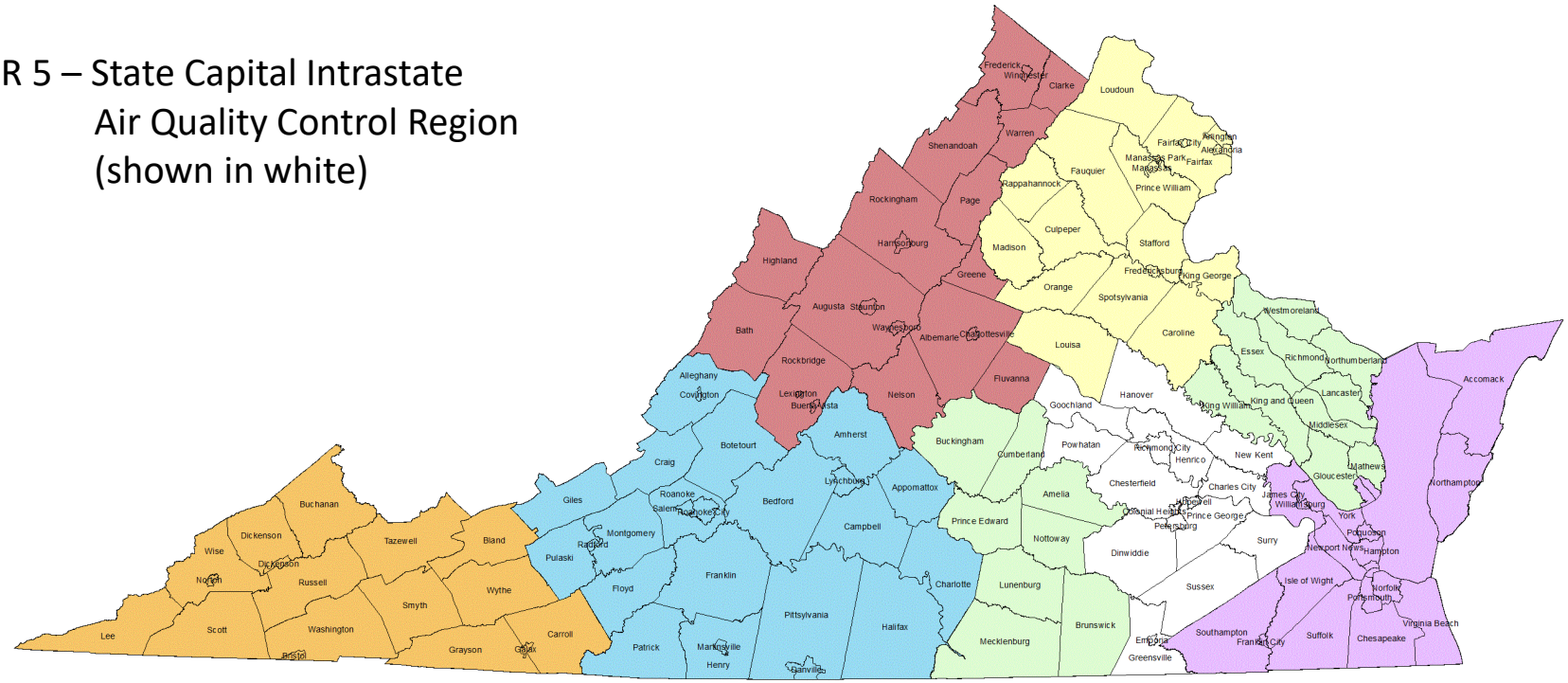
This is a National Park Service air monitoring site. Their data was incorporated into the Virginia reported data in May 1983. The ozone analyzer and data collection equipment belongs to NPS. A TEOM PM2.5 purchased by VISTAS was installed by VA DEQ at the site in the second half of 2004. In 2007, TEOM ownership was turned over to VA DEQ.

Albemarle High School, Albemarle County, 33-A

Since 2002, the Charlottesville area had been designated as a priority for Ozone and PM2.5 sampling. A monitoring site at Albemarle High School was finally found and eventually approved by the School Board. Inspected by EPA III, the site began operation in April 0f 2008..

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

AQCR 5 – State Capital Intrastate
Air Quality Control Region
(shown in white)



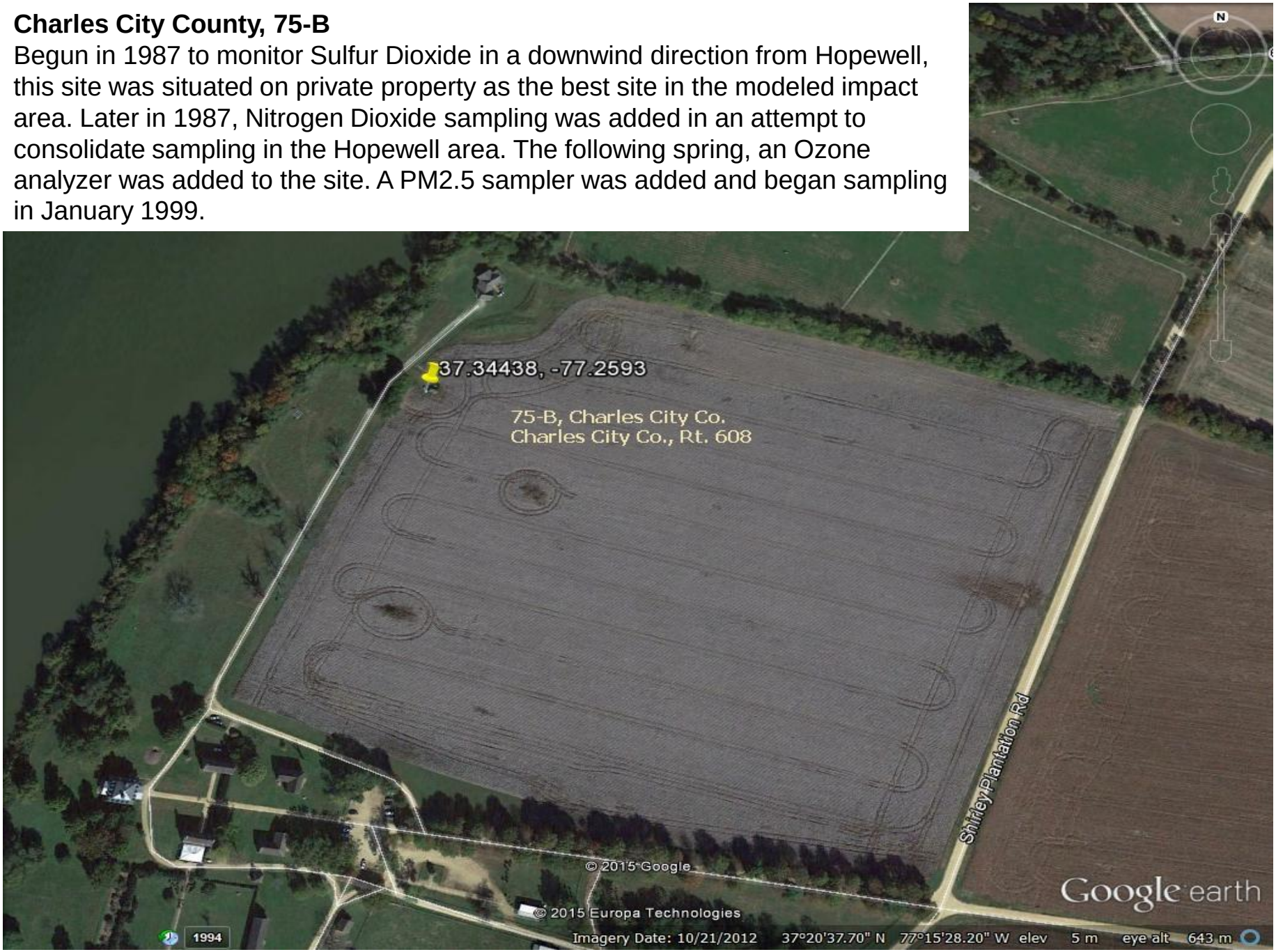
Surry, Sussex

Cities: Colonial Heights, Emporia, Hopewell, Petersburg, Richmond

CBSA/MSA: 40060 – Richmond, VA

Charles City County, 75-B

Begun in 1987 to monitor Sulfur Dioxide in a downwind direction from Hopewell, this site was situated on private property as the best site in the modeled impact area. Later in 1987, Nitrogen Dioxide sampling was added in an attempt to consolidate sampling in the Hopewell area. The following spring, an Ozone analyzer was added to the site. A PM2.5 sampler was added and began sampling in January 1999.



Beach Road, Chesterfield, 71-H

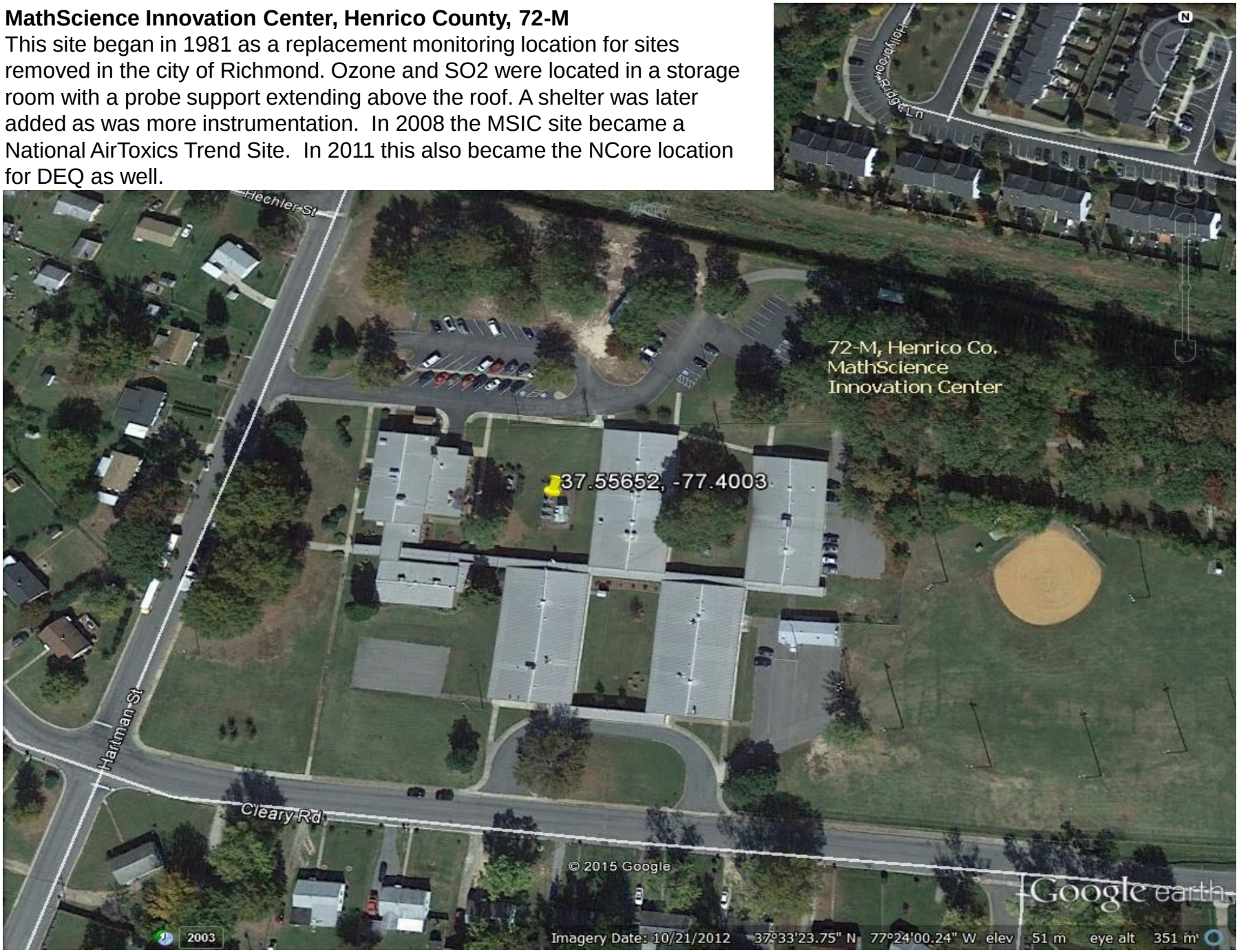
Air monitoring began in April 1980 at the Beach Road VDOT shop in Chesterfield County. Because of its location and security, this site was picked as the upwind Ozone site for the Richmond metropolitan area.

McClellan Road, Hanover County, 73-E

This site was established in 2001 as a replacement for the Richmond Metropolitan Area downwind ozone monitoring site. The original site was on county property and after many years of sampling, VA DEQ was asked to remove the shelter and sampling equipment. To maintain the correct distance and direction downwind of Richmond, the monitoring site had to be placed on private property.

MathScience Innovation Center, Henrico County, 72-M

This site began in 1981 as a replacement monitoring location for sites removed in the city of Richmond. Ozone and SO2 were located in a storage room with a probe support extending above the roof. A shelter was later added as was more instrumentation. In 2008 the MSIC site became a National AirToxics Trend Site. In 2011 this also became the NCore location for DEQ as well.

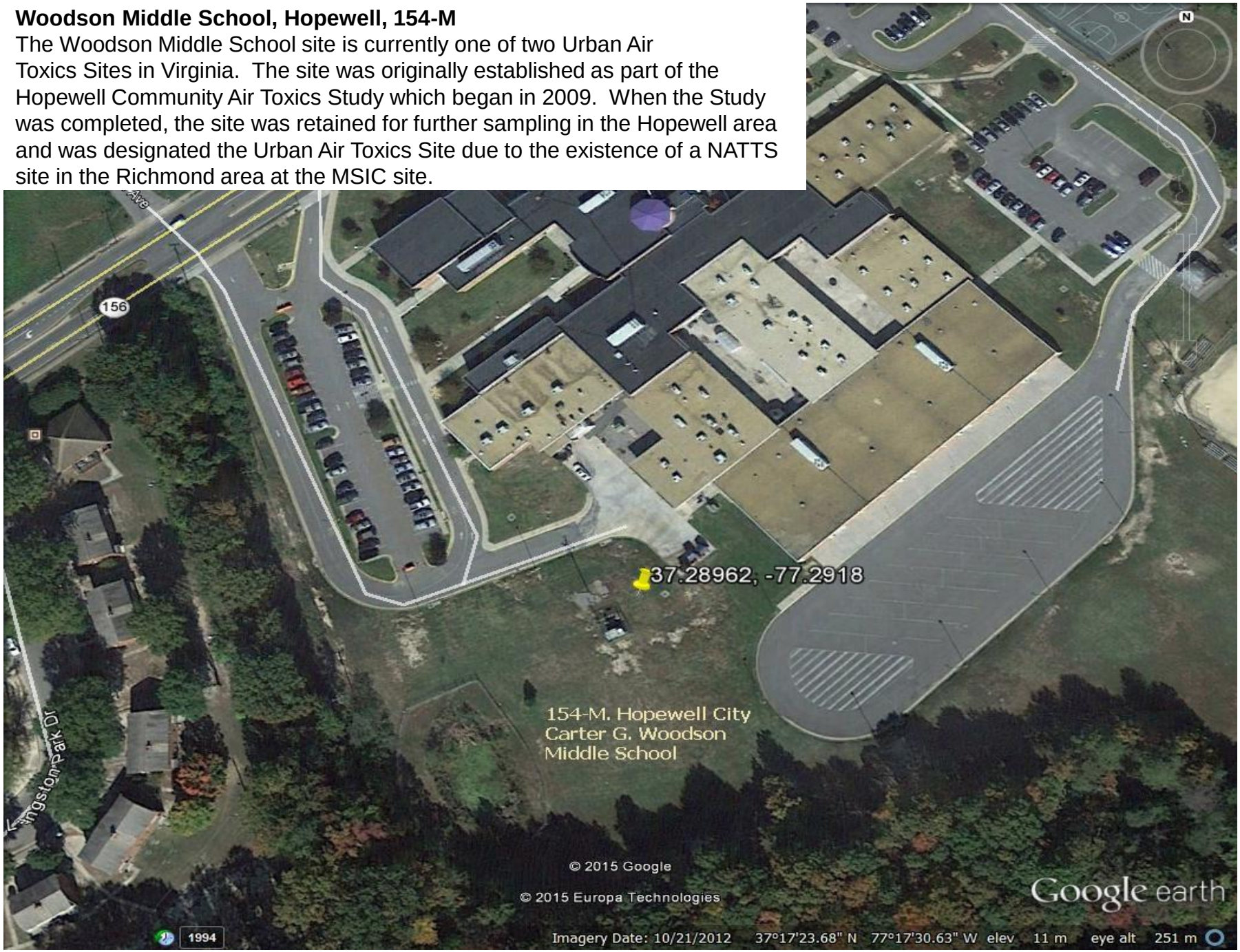


VA DEQ Piedmont Office, Henrico County, 72-N

This PM2.5 site began operation in 1999 as a part of the new PM2.5 network. The location, on the roof of the DEQ office, was selected because of the ease of accessibility and security, and because it was in the rapidly growing West End of the Richmond area.

Woodson Middle School, Hopewell, 154-M

The Woodson Middle School site is currently one of two Urban Air Toxics Sites in Virginia. The site was originally established as part of the Hopewell Community Air Toxics Study which began in 2009. When the Study was completed, the site was retained for further sampling in the Hopewell area and was designated the Urban Air Toxics Site due to the existence of a NATTS site in the Richmond area at the MSIC site.

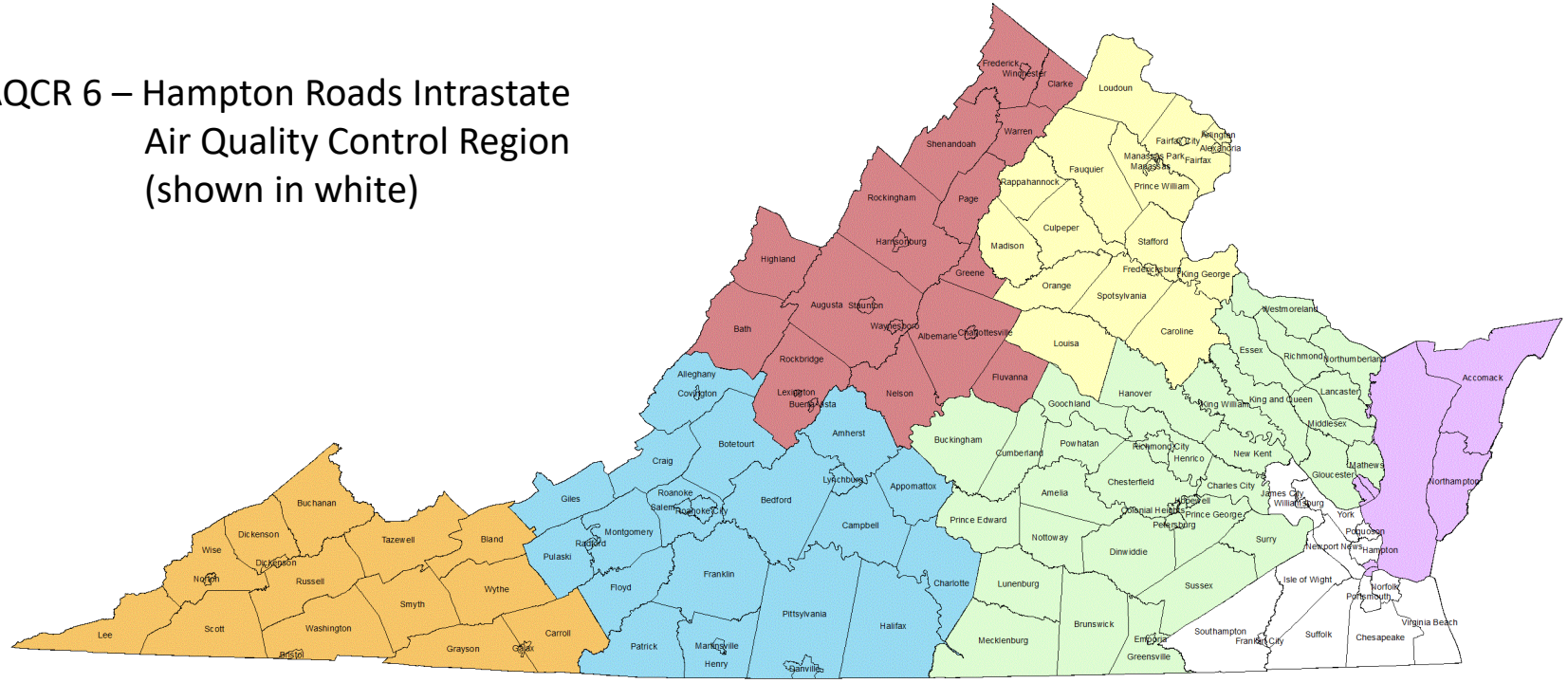


Bryan Park, Richmond, 158-X

Established in mid-2013 as part of the EPA mandated Near Road Monitoring program, this site is in Bryan Park alongside I-95 at its highest traffic volume stretch in the Richmond area.

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

AQCR 6 – Hampton Roads Intrastate
Air Quality Control Region
(shown in white)



Counties: Isle of Wight, James City, Southampton, York

Cities: Chesapeake, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, Williamsburg

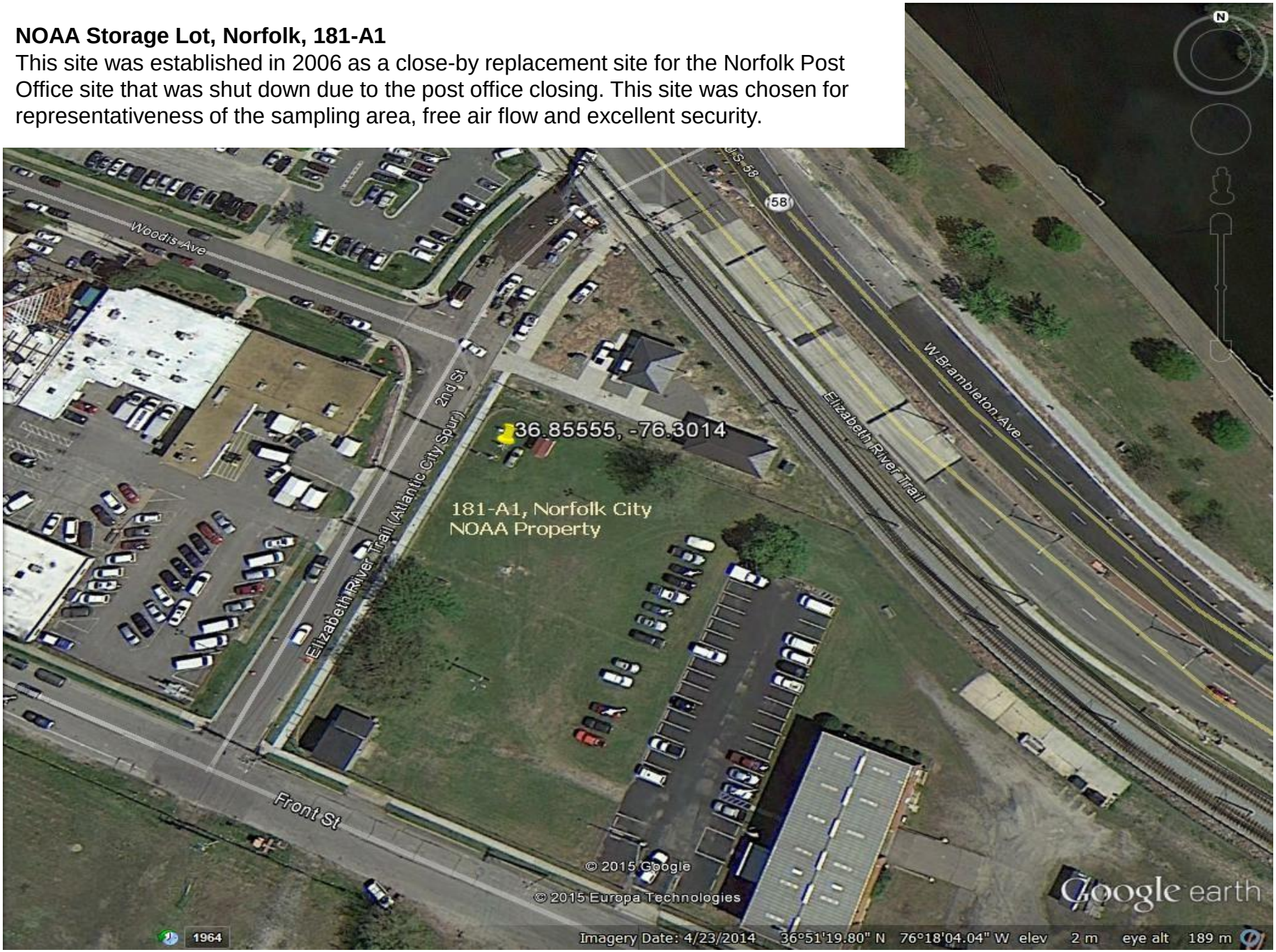
CBSA/MSA: 47260 – Virginia Beach-Norfolk-Newport News, VA-NC

NASA Langley Research Center, Hampton, 179-K

Sampling began in 2010 at this site. This location was a replacement site for the VA School in Hampton that had operated since 1972. The location on the northern portion of the NASA Langley Research Center property has free air flow and excellent security.

NOAA Storage Lot, Norfolk, 181-A1

This site was established in 2006 as a close-by replacement site for the Norfolk Post Office site that was shut down due to the post office closing. This site was chosen for representativeness of the sampling area, free air flow and excellent security.



Suffolk, 183-E

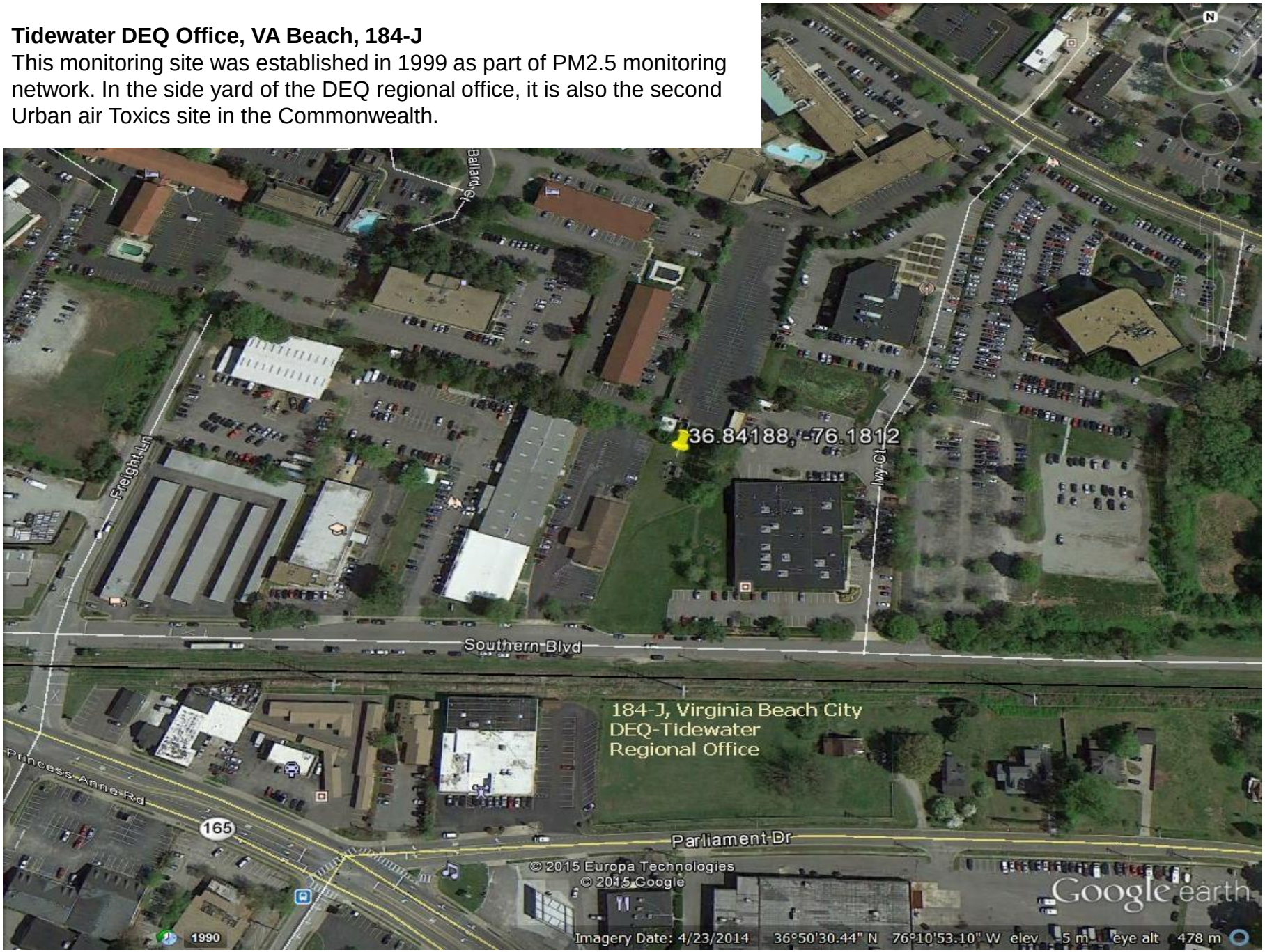
This monitoring site began operation in April 1987 as a NAMS ozone station. The site offered excellent security and is upwind of the Newport News-Hampton area on the Tidewater Peninsula (on the northern side of Hampton Roads).

Suffolk, 183-F

This monitoring site was established in 1991as an EPA required replacement for the terminated NAMS ozone monitoring site at the Cheriton Post Office on the eastern shore of Virginia.

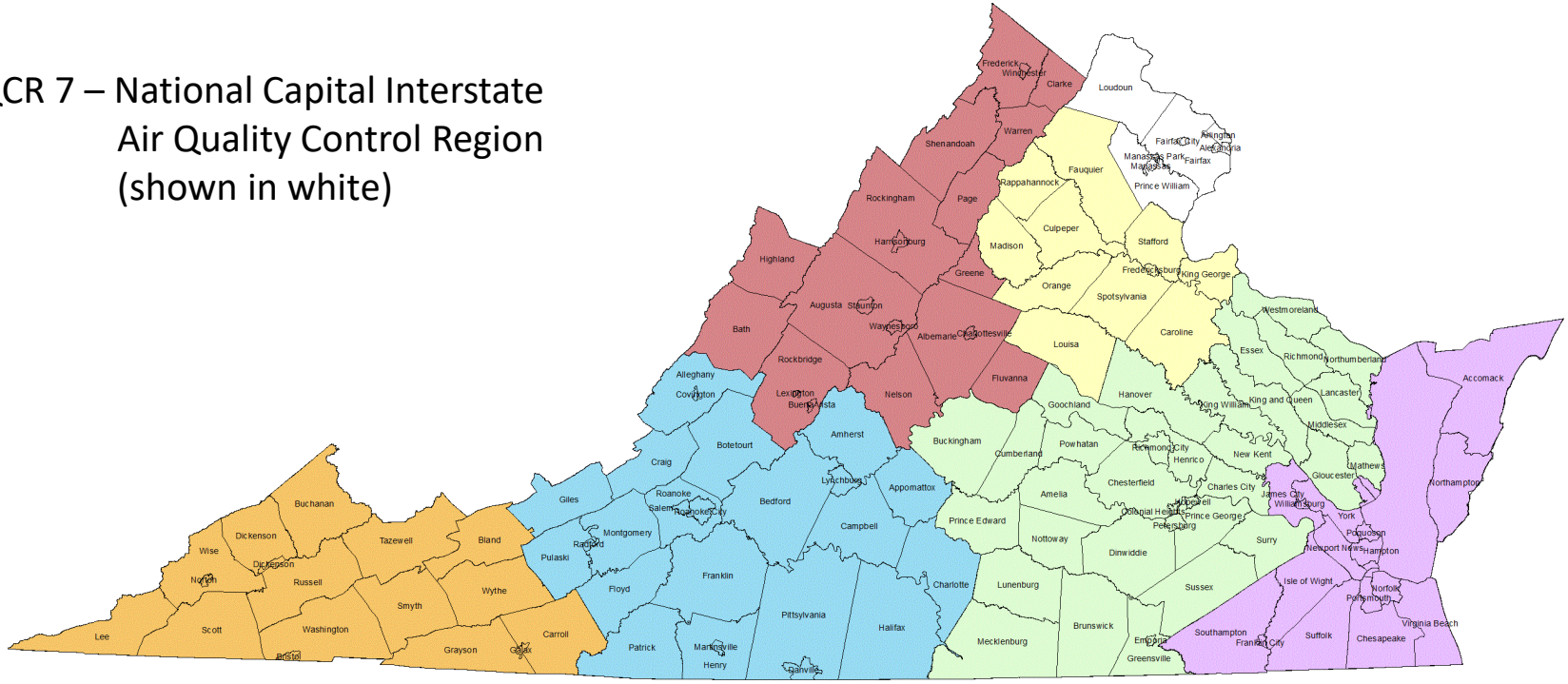
Tidewater DEQ Office, VA Beach, 184-J

This monitoring site was established in 1999 as part of PM2.5 monitoring network. In the side yard of the DEQ regional office, it is also the second Urban air Toxics site in the Commonwealth.



VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

AQCR 7 – National Capital Interstate Air Quality Control Region (shown in white)



Counties: Arlington, Fairfax, Loudoun, Prince William

Cities: Alexandria, Fairfax, Falls Church, Manassas, Manassas Park

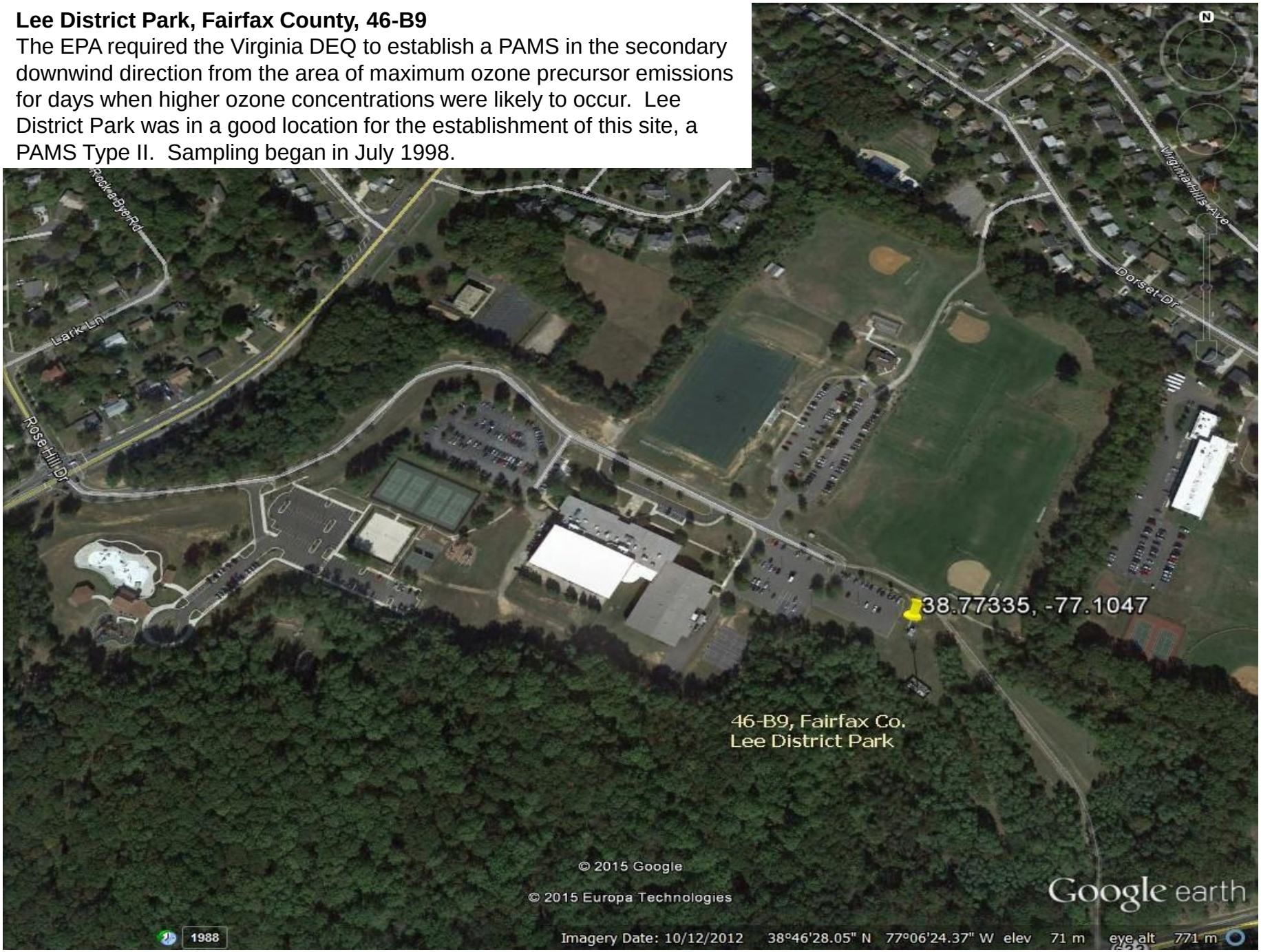
CBSA/MSA: 47900 – Washington-Arlington-Alexandria, DC-VA-MD-WV

Aurora Hills Visitor Center, Arlington, 47-T

This monitoring site was established in late 1977 and began operation in early 1978. The County of Arlington supplied the location and some of the instrumentation (Hydrogen Generator, O3 analyzer, SO2 analyzer, & NOx analyzer) with the stipulation that VA DEQ personnel operate the station. Instrumentation has been added and removed over the years e. g. the hydrogen generator and the SO2 analyzer are no longer maintained at this site.

Lee District Park, Fairfax County, 46-B9

The EPA required the Virginia DEQ to establish a PAMS in the secondary downwind direction from the area of maximum ozone precursor emissions for days when higher ozone concentrations were likely to occur. Lee District Park was in a good location for the establishment of this site, a PAMS Type II. Sampling began in July 1998.



Broad Run High School, Ashburn, Loudoun County, 38-I

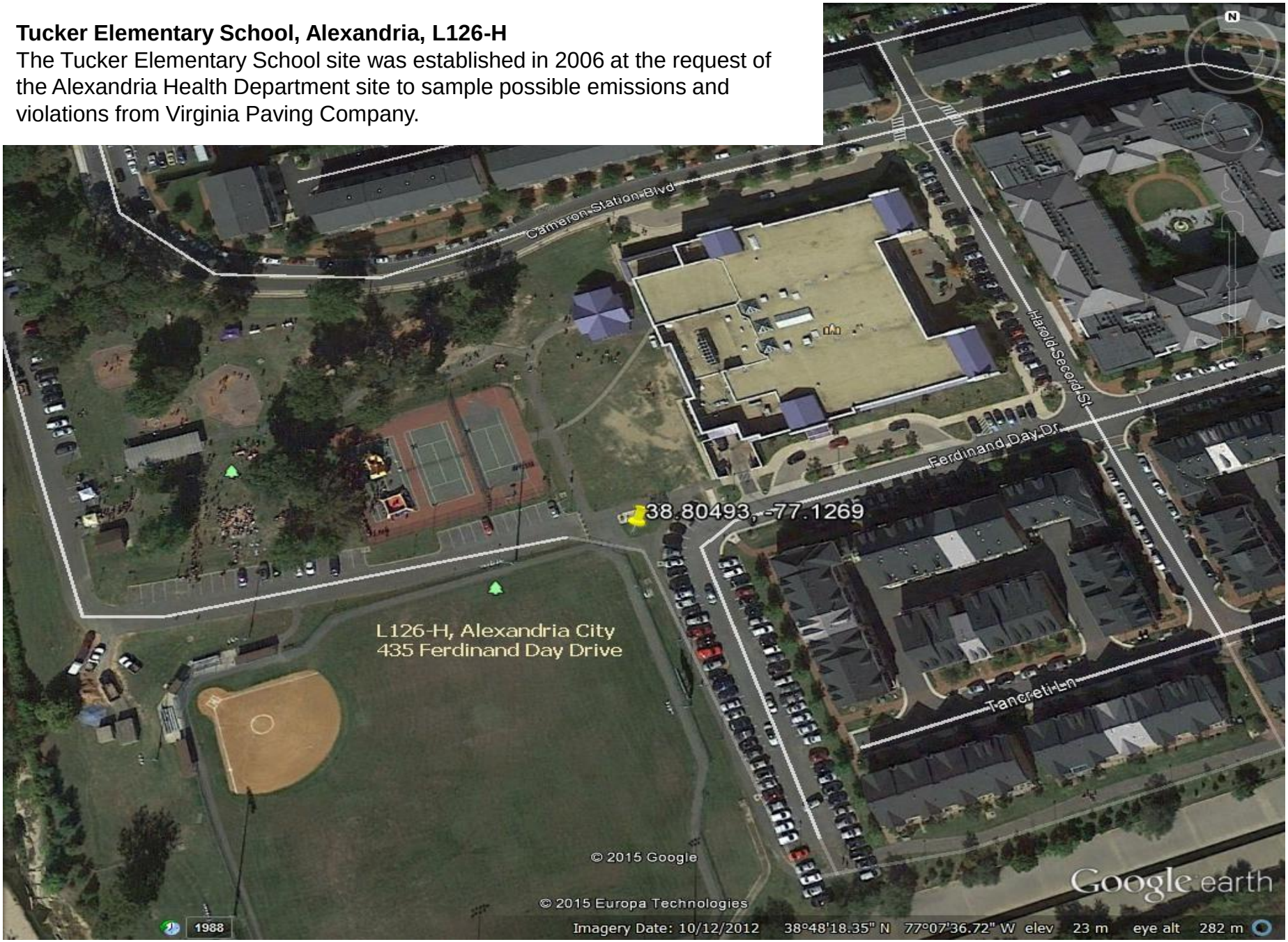
In 1997 VA DEQ was looking for a suitable site in Loudoun County to monitor Ozone, Nitrogen Dioxide and Particulate Matter to address citizen concerns. The site at Broad Run High School was deemed acceptable and sampling began in April 1998.

Long Park, Prince William County, 45-L

The agency Strategic Plan of 1990 identified Prince William County as an area requiring ozone monitoring. A suitable location in the James Long Park was selected and ozone sampling began in April 1991. In 1994, NOx sampling at this site began.

Tucker Elementary School, Alexandria, L126-H

The Tucker Elementary School site was established in 2006 at the request of the Alexandria Health Department site to sample possible emissions and violations from Virginia Paving Company.



Backlick Road Park and Ride, Springfield, Fairfax County, 46-C2

Established in April 2015 as part of the EPA mandated Near Road Monitoring program, this site is in Backlick Road Park and Ride along I-95 in the National Capital Interstate Air Quality Control Region.

ATTACHMENT 3
SITE MAPS – MONITOR LOCATIONS

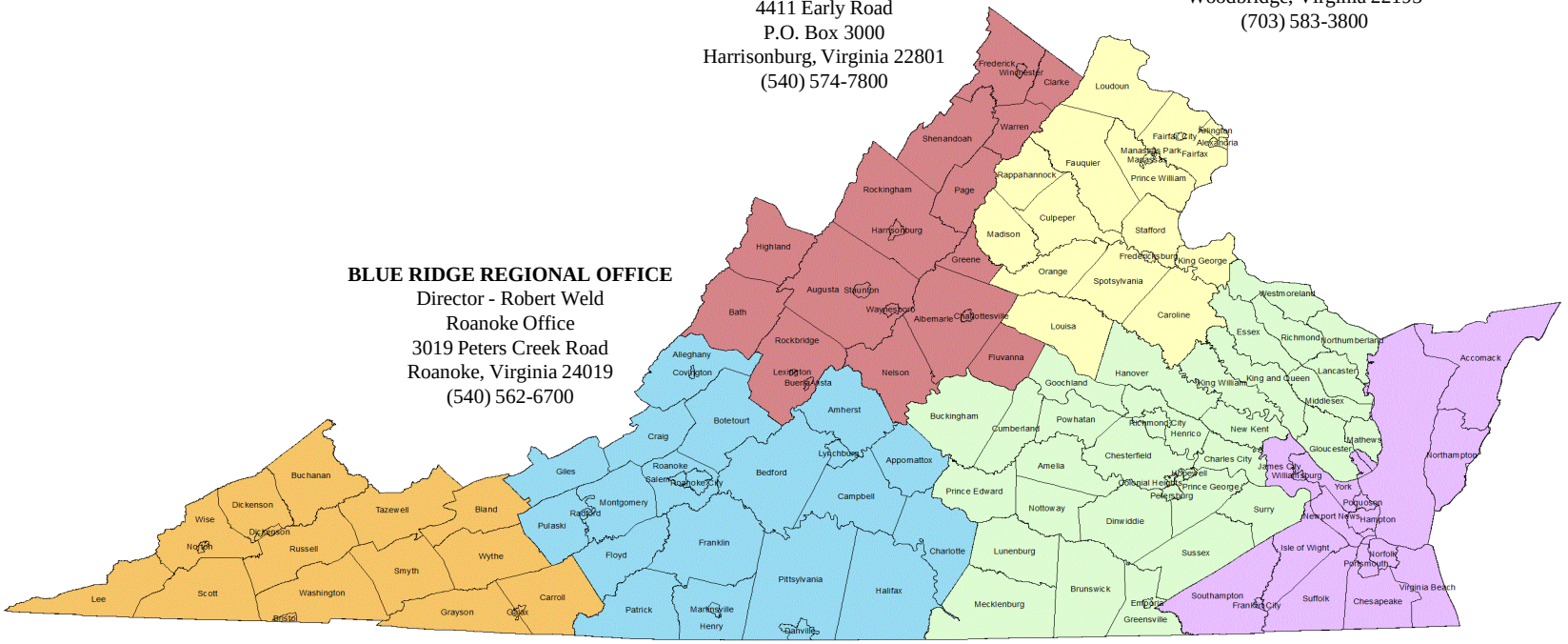
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY
Regional Offices

VALLEY REGIONAL OFFICE
Director - Amy T. Owens

4411 Early Road
P.O. Box 3000
Harrisonburg, Virginia 22801
(540) 574-7800

NORTHERN REGIONAL OFFICE
Director - Tom Faha
13901 Crown Court
Woodbridge, Virginia 22193
(703) 583-3800

BLUE RIDGE REGIONAL OFFICE
Director - Robert Weld
Roanoke Office
3019 Peters Creek Road
Roanoke, Virginia 24019
(540) 562-6700



SOUTHWEST REGIONAL OFFICE
Director – Jeffery Hurst

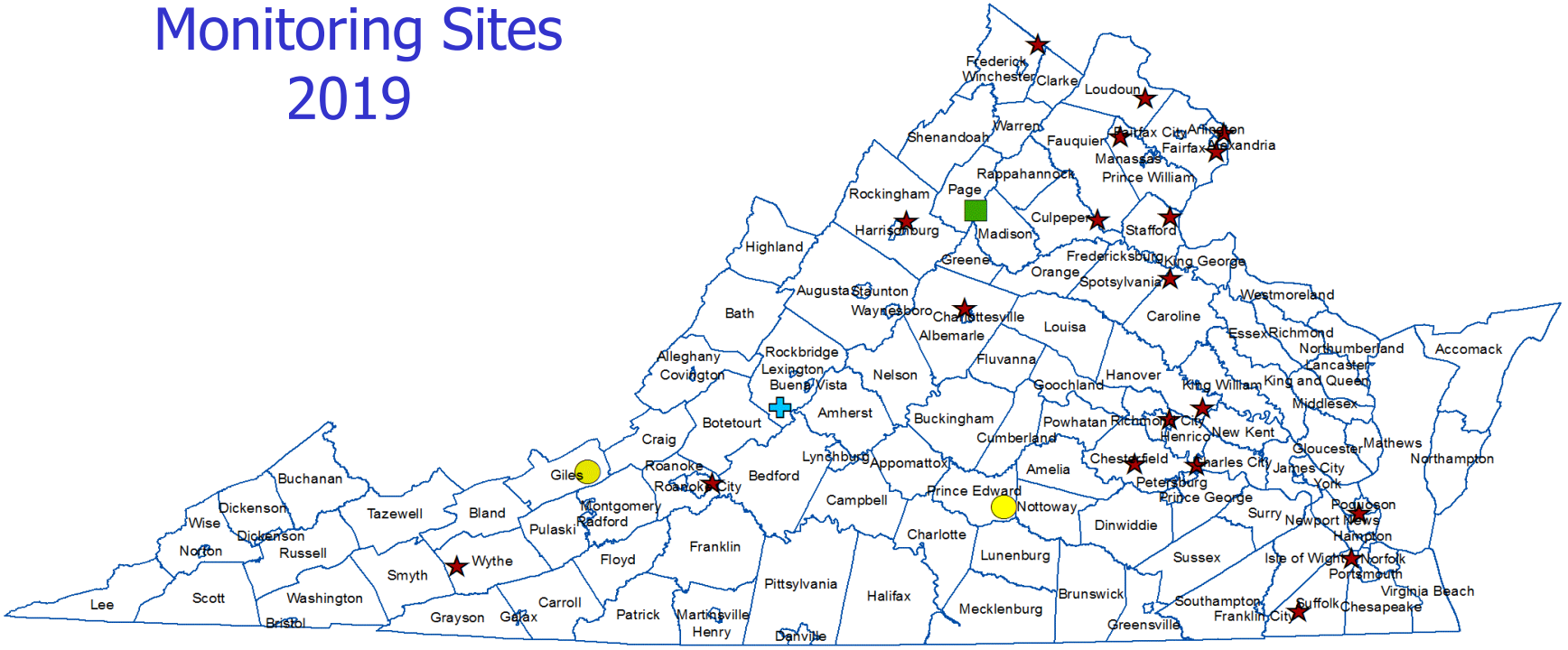
355 Deadmore St.
P.O. Box 1688
Abingdon, Virginia 24212
(276) 676-4800

PIEDMONT REGIONAL OFFICE
Director – James Golden
4949-A Cox Road
Glen Allen, Virginia 23060
(804) 527-5020

TIDEWATER REGIONAL OFFICE
Director – Craig Nicol
5636 Southern Blvd.
Virginia Beach, Virginia 23462
(757) 518-2000

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Ozone Monitoring Sites 2019



VA Department of Environmental Quality

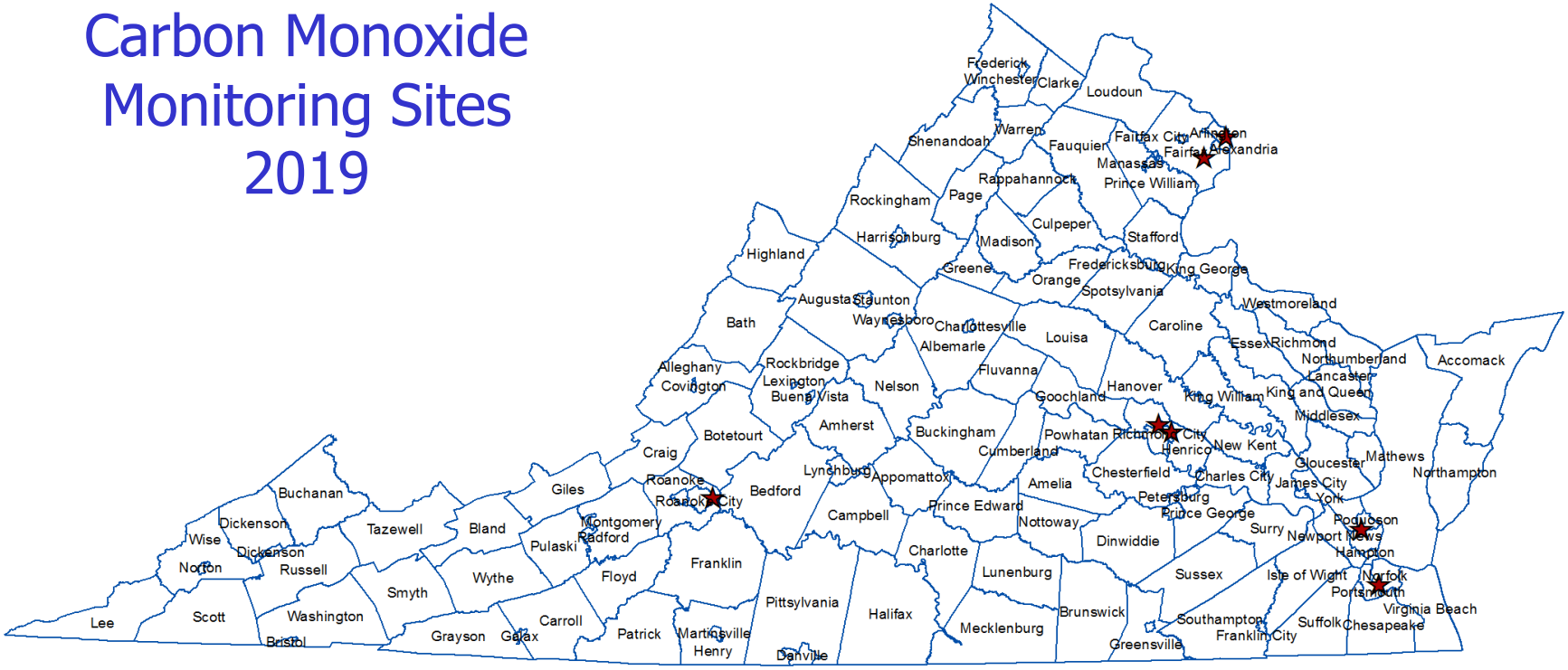
EPA CASTNET sites

National Park Service

U S Forest Service

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Carbon Monoxide Monitoring Sites 2019



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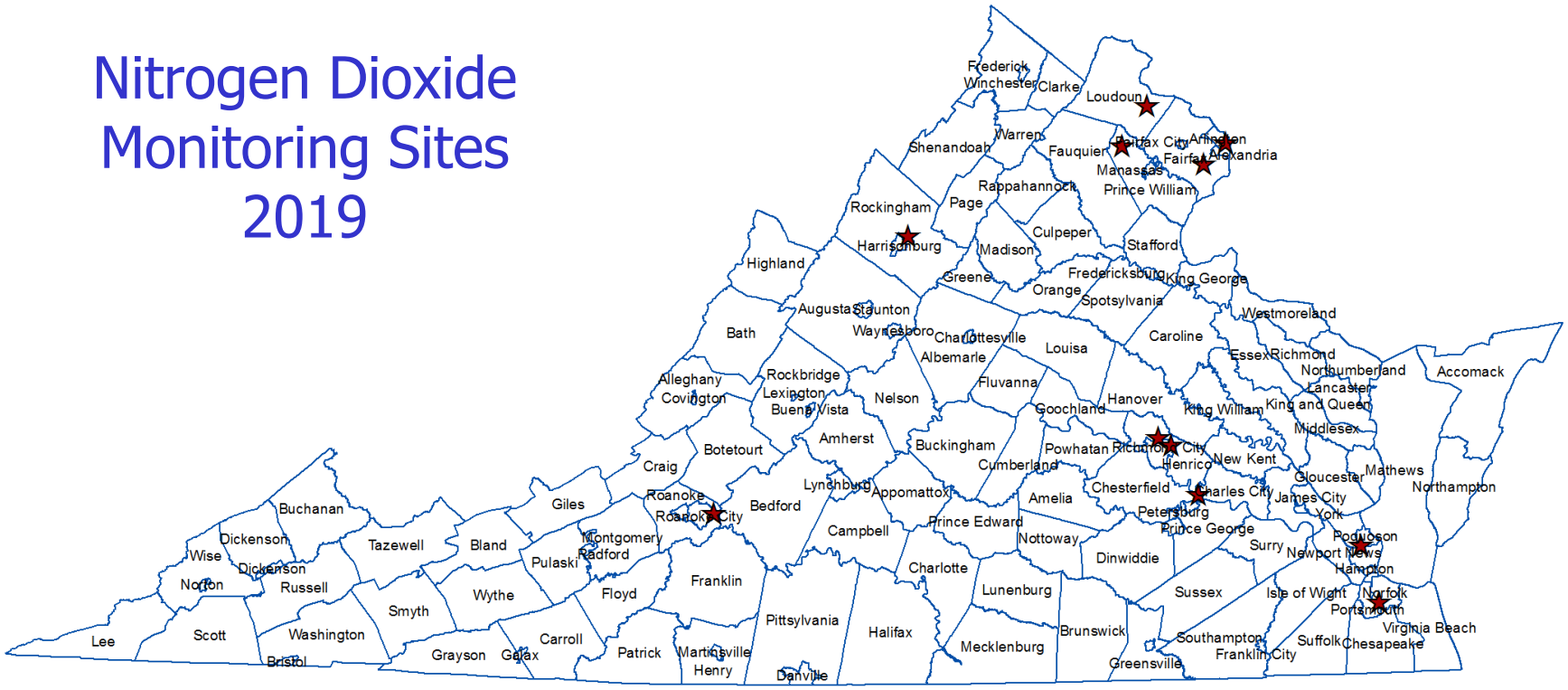
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Nitrogen Dioxide Monitoring Sites 2019



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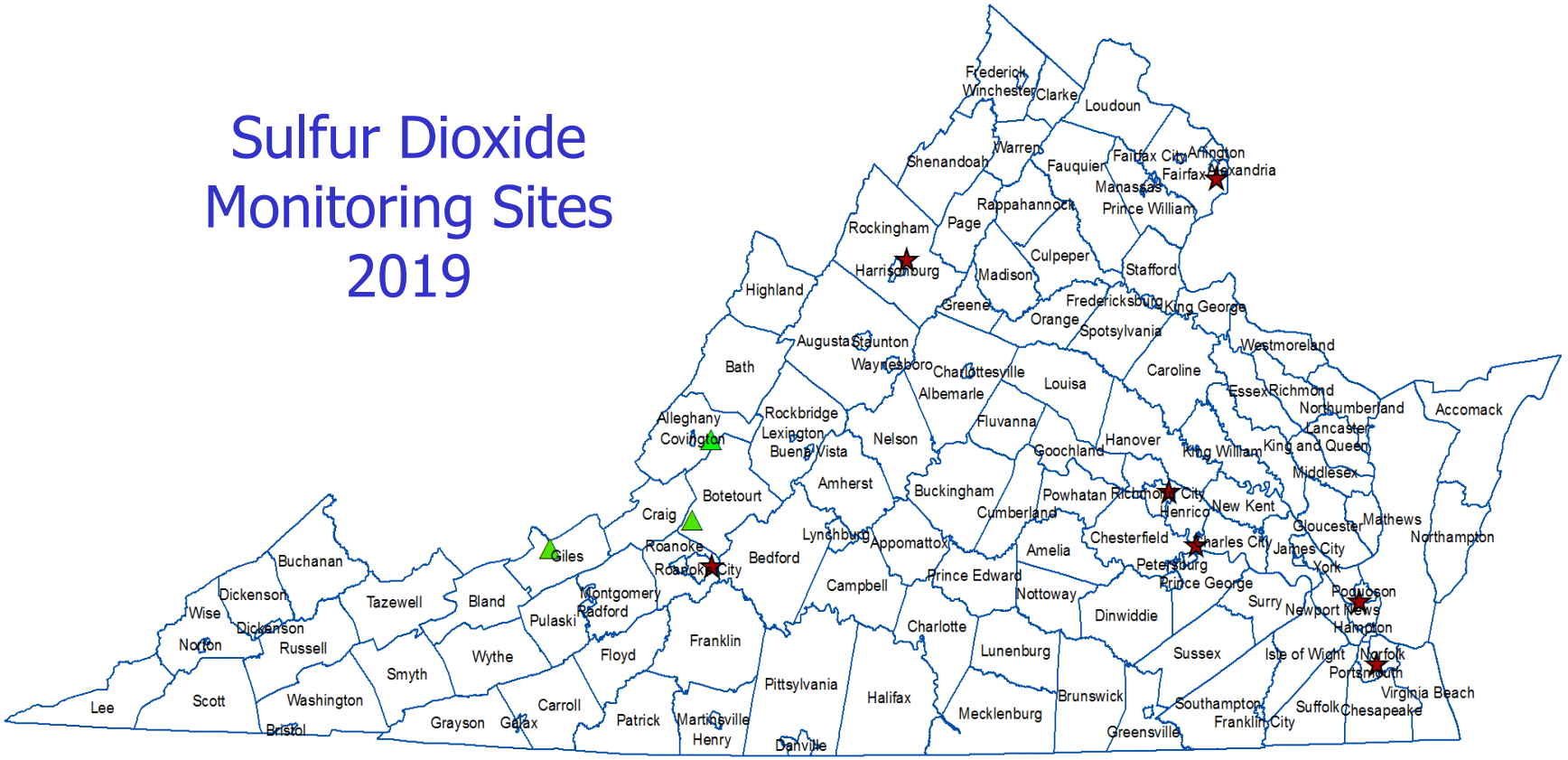
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Sulfur Dioxide Monitoring Sites 2019

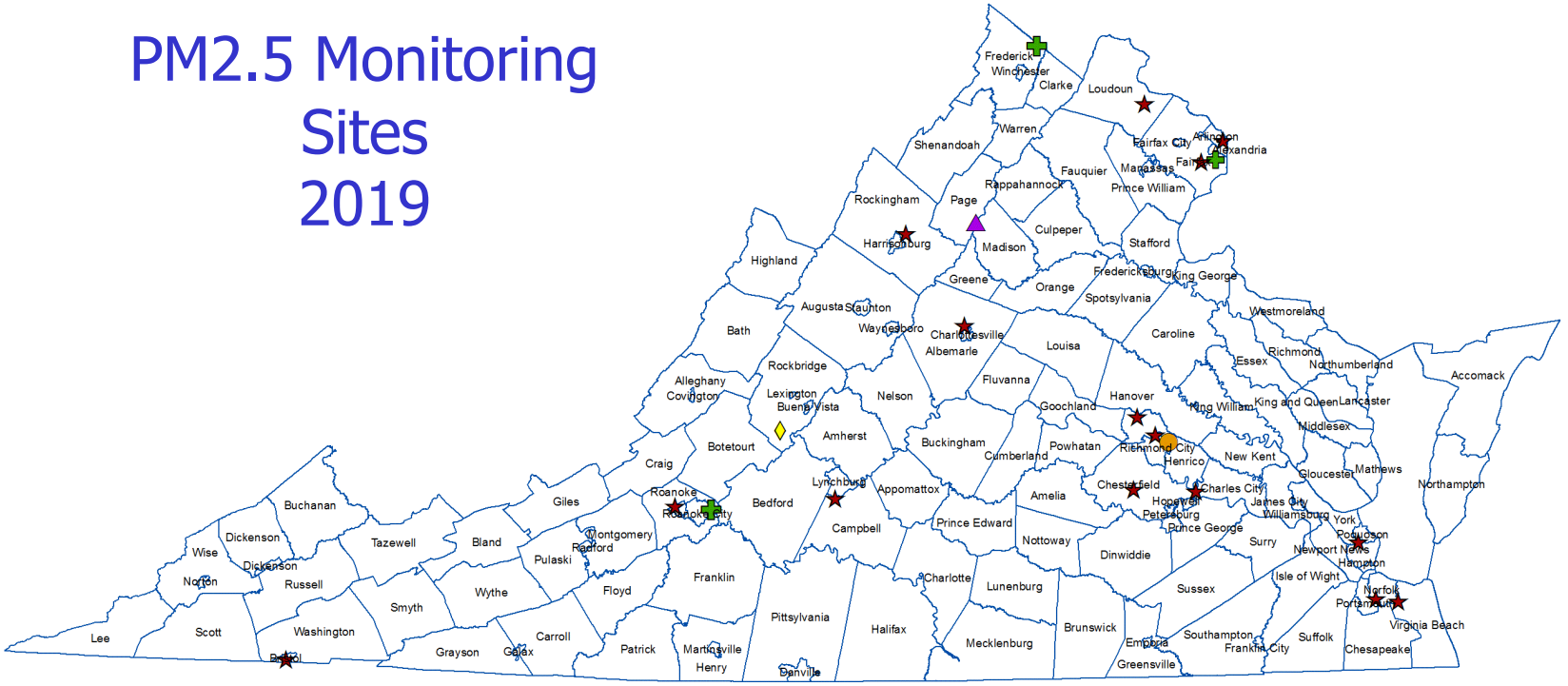


VA Department of Environmental Quality

Industrial Sites

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

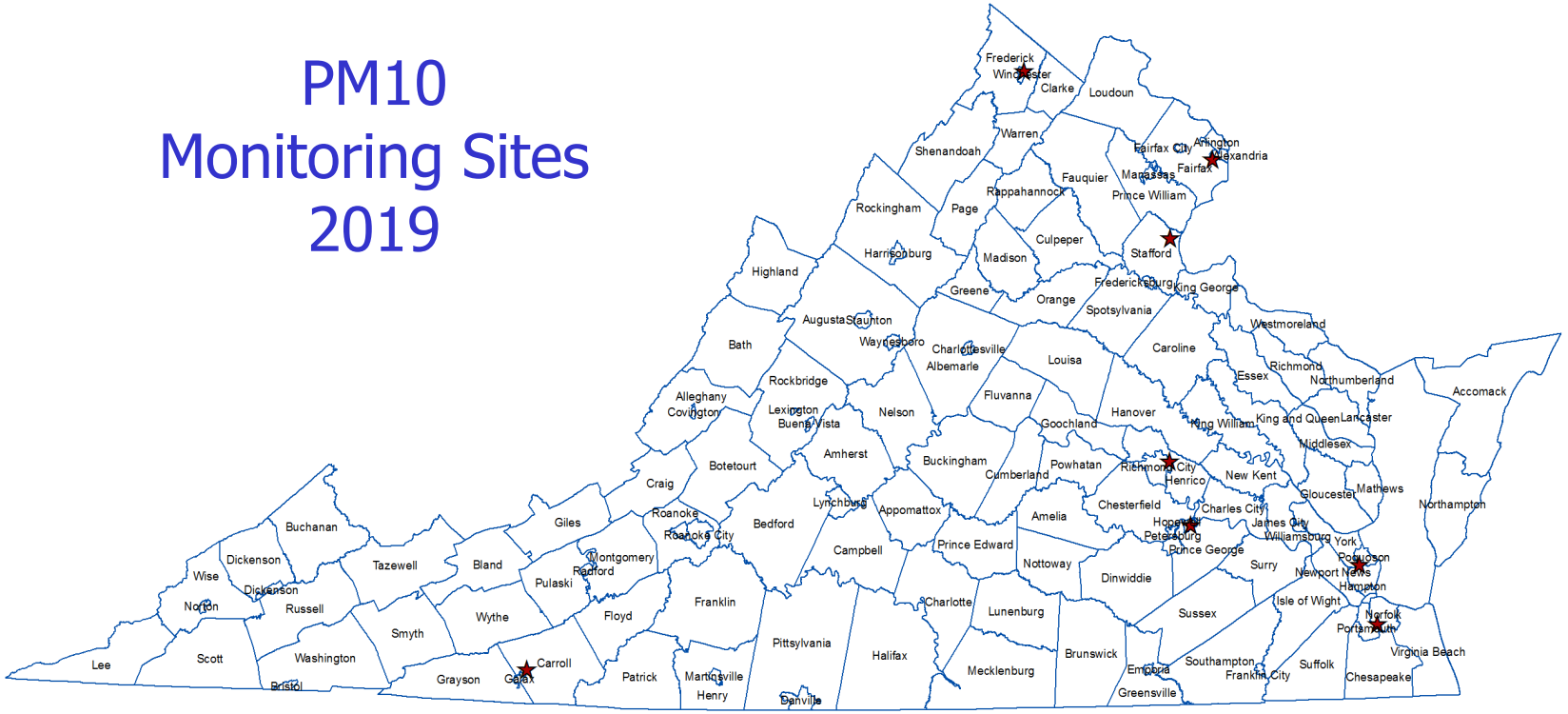
PM2.5 Monitoring Sites 2019



- FRM/FEM Monitors
- FRM Mass and TEOM Samplers
- IMPROVE sampler
- FRM Mass, Speciation, FEM, Carbon
- TEOM & IMPROVE sampler, Big Meadows, NPS

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

PM10 Monitoring Sites 2019



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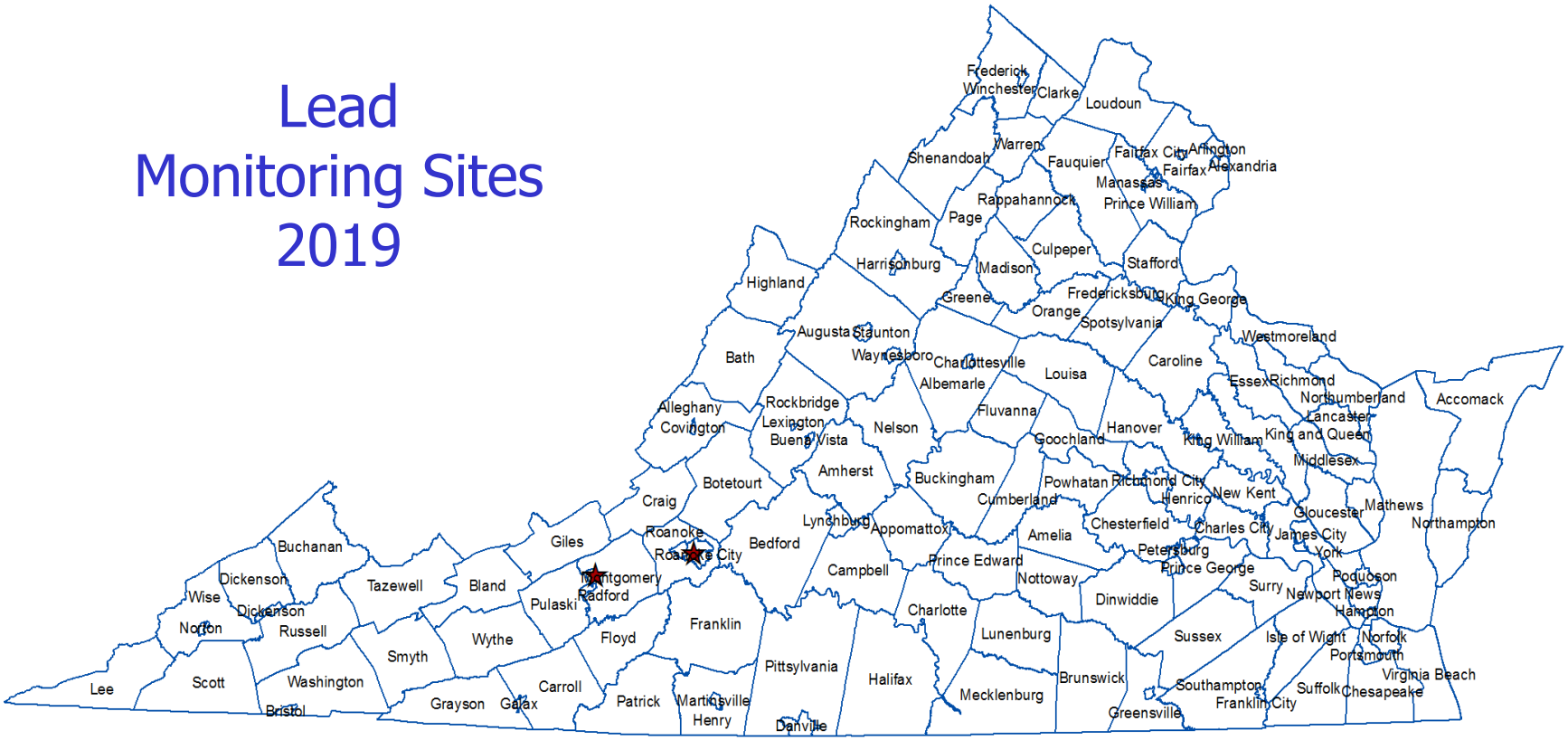
Lead Monitoring Sites 2019



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